DOCUMENT RESUME

ED 072 282 VT 018 769

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TITLE	Development of a Validated Instructional System for Hospitality Education. First Annual Report.
INSTITUTION	Pennsylvania State Univ., University Park. Food Service and Housing Administration.
SPONS AGENCY	Pennsylvania Research Coordinating Unit for Vocational Education, Harrisburg.
REPORT NO	P-19-1016; SU-14-463
PUB DATE	1 Jul 72
NOTE	328p.
EDRS PRICE	MF-$0.65 HC-$13.16
DESCRIPTORS	Autoinstructional Aids; Cognitive Objectives; Course Content; Curriculum Development; *Food Service Occupations; Human Services; *Instructional Systems; *Management Education; *Manuals; Post Secondary Education; Practicums; Psychomotor Objectives; Resource Materials; Skill Development; Vocational Development; *Vocational Education
IDENTIFIERS	*Hospitality Education

ABSTRACT

Funded by a grant from Pennsylvania's Research Coordinating Unit, three key seminar-practicum courses were designed for psychomotor and cognitive skills development in the food service area of post-secondary hospitality education. This 36-week, 3-course sequence utilizes weekly seminars, self-instructional packages, and "real-life" experiences in food production problems, foods administration, and food systems components. The extensive color-keyed instructional materials contain ten lessons and skill descriptions which include required reading materials, related questions, student worksheets, and answer keys. A wide range of visual aids illustrates the text, which is 3-hole punched for ease in insertion and removal of pages. The first annual report concerning the development of these instructional materials precedes the ten units, which include various resource materials and a pilot form of a vocational commitment index. (AG)

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FIRST ANNUAL REPORT

Project 19-1016
School Unit 14-463

Development of a Validated Instructional System for Hospitality Education

Submitted to:

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Research Coordinating Unit
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by:

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July 1, 1972

VT018769

I. Introduction

With funds made available by a grant from the Research Coordinating Unit of the Department of Education of the Commonwealth of Pennsylvania, the Food Service and Housing Administration Program has undertaken to develop a new approach to a number of key courses in post-secondary hospitality education. This approach relies principally on the development of a "seminar-practicum" which is based on a triad of learning opportunities: the workplace, self-instructional packages, and a weekly seminar.

In the fast growing field of hospitality education, the seminar-practicum offers three principal advantages.

1. The seminar-practicum eliminates the quantity foods lab which is expensive both from the point of view of the investment required to establish such a laboratory and the instructional operating costs of offering courses in such a laboratory.
2. The seminar-practicum should improve the quality of learning by moving the student from a laboratory simulation to a controlled experience in a "real world" setting.
3. Because the student is working in industry, he has an opportunity to earn while he learns, lowering the effective cost of education and, hence, making it available to lower income and disadvantaged groups.

The student in the seminar-practicum has the opportunity to learn from the workplace. The student's attention is focused, on a week-by-week basis, on different subject matter areas by the self-instructional packages and the learning experiences available to the student in the workplace are supplemented by subject matter content in the self-instructional package.

Finally, the student is involved in a weekly 2-1/2 hour seminar in which the "real world" can be contrasted with the "ideal world" of the text and matters not understood by the student can be clarified. An extremely important enriching element of this instructional system is thought to be the fact that students will, in effect, be teaching each other as they discuss their experiences in the seminar.

II. Instructional System Design

1. Course subject matter

The seminar-practicum courses are:

HFS 850 - Food Production Problems

Physical characteristics of principal food product groups considered. Topics include: preparation techniques, quality and cost control

HFS 860 - Food Production Systems

The principal Food Service Administrative routines are considered from the point of view of the supervisor and middle manager.

HFS 870 - Food and Beverage Administration

Components of food service systems are identified and studied as separate problems and as a total system.

2. The psychomotor domain

Psychomotor skills are required for each of the courses, although these are principally concentrated in the first course. It has been recognized that it is probably not practical to require the student to move uniformly through psychomotor learning experiences because the opportunities to work on the various stations where these skills may be acquired will not necessarily come to the student in the order desired. In general, therefore, it is expected that a certain number of psychomotor skills (75 of which have been identified for the first course) will be listed and the student will be expected, within the three course sequence of 36 weeks, to master each of these skills. Psychomotor skills appropriate to each week's subject matter will be specifically identified. The student will have the option of learning those skills that week, if possible, or of completing the skill learning assignment at some later date. (or of having already completed at some earlier date.) He will be required to complete at least one-third of the skill learning assignments in each term.

Figure 1 presents a schematic diagram of the student behavior associated with psychomotor skills. The student identifies a skill from a list, practices it, and evaluates his own performance. If he is not satisfied, he has the option of seeking outside help or of doing it again by himself. If he decides to choose outside help, peer help from students or from employees in the place of employment is available. Having received outside help, the student has then the option to return and practice more or to move on to evaluation by the supervisor in the place of employment. If the supervisor considers that the student has not learned the skill, the student has the option of outside help or of practicing again by himself and he remains in this loop until he has not only satisfied himself, but his supervisor that he has learned the skill. At the time that the supervisor is willing to "sign off" on a skill, the student moves to another skill but is also subject, in the case of crucial skills, to academic faculty evaluation.

Psychomotor skill learning will be "accounted for" by giving the student a "skills form". On this form there will be a place for the skill number, the skill name, the student's signature certifying that he has learned the skill and the signature of his supervisor, certifying that he considers the student to have satisfactorily mastered this skill. There will be an additional provision for academic instructor validation in the case of crucial skills.

3. Cognitive domain

Figure 2 presents a model of the student behavior process in the cognitive domain. The student performs a learning activity and evaluates it by answering or completing student workbook activities at the end of the content mentioned. If he judges that he has not yet learned it, he has the option of outside help including peer help and, if necessary, instructor help. At any point that the student is satisfied, he asks himself if he has completed all of the week's work and, if he has not, he moves on to the next learning activity. At the end of the week's work, workbook assignments are handed in to the instructor. Since most of the homework assignments will be self-tests with a key provided to the students for immediate feedback on whether he has or has not mastered the material, the grading significance of the homework and self-tests will be principally on a "go-no go" basis. The student receives credit if he has done the work and receives no credit if he has not.

The weekly class will begin with a class quiz covering the material assigned in the homework. If the student does not receive a satisfactory grade on the class quiz, a number of behavior options are available to him, including relearning through peer help or instructor assistance, including the option of a requiz. The student, it is necessarily true, may decide to ignore poor performance.

Similarly, the class discussion performs a kind of self-test in which the student can ask himself whether he is satisfied with his performance, and if he is not, once again he has a number of behavioral options available to him, including relearning by himself, through peer help or by assistance from the instructor. Again, it is always the student's option to ignore unsatisfactory performance. At the end of each class, all students proceed to the next week until the tenth week of the class has been reached. At the end of that number of weeks, subject to final examination, a grade is recorded, and the student moves on to the next course.

While the above indicates a required progression, the concept of the seminar-practicum has been significantly refined as a result of interaction with Mr. Clarence Dittenhaffer of the Research Coordinating Unit Staff in Harrisburg. It had been earlier suggested by Dr. Mager, a consultant used during earlier quarters that the class not be forced to focus on just one station at each meeting in HFS 850 and that students be free to discuss whatever station they were interested in. While this seemed like a useful idea, staff could not determine exactly how such a class would be conducted. Accordingly the idea was shelved for use at a later date. In conferences held with Mr. Dittenhaffer both at University Park and at the RCU offices in Harrisburg, a concept which permitted the orderly movement through the package materials on a week-by-week basis in HFS 850 and at the same time permitted students to discuss those subjects which were of interest to them because of their work assignments during that week emerged. It is intended that the first portion of the class will be devoted to a discussion of the subject matter assigned for the week. Since many students will not have worked on that station, it is intended that this section of the class will principally be aimed at answering questions regarding text materials and making certain that students do, indeed, get through all the material at least one time. Also, during this period certain lecture material related to that subject matter or appropriate demonstrations may be presented.

During the second portion of the class, students will be asked to divide into interest groups to discuss briefly with peers who have had similar work assignments during the week, the problems discovered on various stations. (Students will be encouraged, if not required, to do the reading appropriate to the station on which they are working at the time that their work assignment takes them there as well as at the time that the class is assigned the subject matter of that station.)

Interest groups will then report questions and reactions to the instructor for discussion by the entire class. The project staff are indebted to Mr. Dittenhaffer of the Research Coordinating Unit for his interest and assistance in improving the format of the proposed seminar for HFS 850. Because the materials found in HFS 860 and 870 are significantly more conceptual in nature, it is not anticipated that this deviation from the general model will be possible in those courses.

4. Use of "Ideal Restaurant"

Sample instructional package design work has concentrated thus far principally on the first two courses. The presentation of the material has been facilitated by the identification and description of a "pedagogically ideal restaurant" which has been named the $\overline{\mathrm{H}}$FS (pronounced Bar HFS). The function of the $\overline{\mathrm{H}}$FS is to compare and contrast for the student an ideal model with the real world work setting in which he is engaged. One of the important functions of the weekly seminar will be to discuss the contrast between the student's workplace and the "ideal" material presented in the $\overline{\mathrm{H}}$FS. One of the roles of the instructor will be to identify which variations from the ideal are acceptable and which are generally not acceptable.

Clearly, an important function of the $\overline{\mathrm{H}}$FS is to give a pedagogical means of establishing certain basic standards of performance and quality since students will be working in various work settings in which quality compromises may commonly be accepted.

5. HFS 850 Food Production Problems

A set of draft packages has been completed for HFS 850. This draft package is included as Appendix A of this report. It will be noted that the student moves from work-station to work-station in progress through this course, familiarizing himself with the principles, problems, and practices related to the preparation of various food groups. In this course, it is intended to provide the student with the knowledge base necessary to supervise skilled workers. The principal emphasis is not on making the student a cook, but on giving the student reasonable level of familiarity which enables him to interact with skilled workers as an equal.

6. HFS 860 Food Production Systems

This course is now complete in first draft form. That draft, however, is not in sufficiently final form to be a useful adjunct to this report. It is hoped that the draft of HFS 860 may be included as an appendix of the first quarterly report for the academic year 1972-73 to be submitted in October 1972. Work on this course has proceeded at a slower pace because a much wider variety of subject matter specialists have had to participate in the development of subject matter for the course.

7. HFS 870 Food and Beverage Administration

Work is just beginning on the draft of HFS 870, although layout and design materials have been developed for this course and submitted to a consultant, Fred Schmidt Associates.

III. Validation

The development, refinement, and establishment of the Vocational Commitment Index has been completed. It appears to be a valid and reliable instrument to employ in the research for this project. A complete report on this index is included in the test manual attached as Appendix B.

The development of an achievement test for post-secondary hospitality education is completed. Although the test has not been pilot tested, information on test reliability and validity will be secured when it is administered during the Fall of 1972 for the purposes of testing project hypotheses. The test and manual is attached as Appendix C.

To secure data on the subject's socio-economic status, Hollingshead's (1957) Two Factor Index of Social Position will be employed. In view of the time required to complete all of the data gathering instruments, it appeared useful to select a method for assessing socio-economic status which would not require a lengthy device. The Hollingshead technique classifies the occupation and education of the subjects father according to the following scales:

Occupations	Description
I	Higher Executives, Proprietors, Major Professionals.
II	Business Managers, proprietors of Medium Sized Businesses, Lesser Professionals.
III	Administrative Personnel, Small Independent Businesses, Minor Professionals
IV	Clerical and Sales Workers, Technicians, Owners of Small Businesses
V	Skilled Manual Employees
VI	Machine and Semi-skilled
VII	Unskilled.

Occupations	Description
I	Graduate Professional Training
II	Standard College or University Graduation
III	Partial College Training
IV	High School Graduates
V	Partial High School
VI	Junior High School
VII	Less than High School

Hollingshead's Two Factor Index of Social Position is derived by multiplying the continuum rating by the factor weight. The occupation and education factors are weighted with values of 7 and 4, respectively.

The Hollingshead social positions are finalized in the following manner:

Social Class	Range of Computed Scores
I Upper Class	11-17
II Upper-middle Class	18-27
III Lower-middle Class	28-43
IV Upper-lower Class	44-60
V Lower-lower Class	61-77

Work Under Way

A device to be used by employers to rate subject's work performance has not yet been secured. However, one device which could be used or adapted for use is found on the following page.

Securing the samples for hypothesis testing has been begun but additional contact is needed to arrive at dates, times, places and numbers of subjects for data collection.

The following institutions have indicated a willingness to cooperate in providing subjects for this project:

Hotel and Resort Management Department
Paul Smith College
New York, New York 12970

Hotel, Restaurant and Travel Administration Department
University of Massachusetts
Amherst, Massachusetts 01002

Food Service and Housing Administration
The Pennsylvania State University
University Park, Pa. 16802

Data collection will require the administration of the packet of tests including the Vocational Commitment Index, the Achievement Test for post-secondary hospitality education and a personal data form. The test packet cannot be mailed to subjects and a test administrator will be needed to collect data.

Dr. Mary Quam was contacted to explore the possibilities of presenting the project at the 1973 Convention of the American Home Economics Association. This possibility has been confirmed by Dr. Quam whose letter is attached to this report as Appendix D.

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APPRAISAL RATING DEFINITIONS

Each factor is to be rated on one of the five degrees defined.

RATING

VOLUME OF SALES OR WORK PRODUCED

5 Production always unusually high. Works very fast and steadily.

4 Production usually more than required. Considered noticeably satisfactory. Fast, steady worker.

3 Production normally meets standard requirements. Average worker. Performance satisfactory.

2 Production usually below standard requirements. Slow worker. Performance unsatisfactory.

1 Production very unsatisfactory. Seldom meets standards. Loafs, wastes time.

QUALITY OF WORK PRODUCED

5 Always does a very thorough, accurate job. Rarely makes errors.

4 Usually does a complete, accurate job. Occasionally makes errors.

3 Work usually meets quality requirements. Has average amount of errors.

2 Work is frequently inaccurate. Seldom meets quality standards. Has many errors.

1 Work is very careless. Causes waste. Very unsatisfactory performance.

KNOWLEDGE OF JOB

5 Outstanding knowledge of present job and necessary related work. Considered as possessing highest skill and experience at regular assignment.

4 Good knowledge of present job and necessary related work. Considered thoroughly capable at regular assignments.

3 Fair knowledge of present job and necessary related work. Considered as possessing only average skill and capabilities.

2 Possesses no skill beyond routine performance on present job. Work is generally unsatisfactory requiring close supervision and considerable instruction beyond average requirements.

1 Inadequate and definitely unsatisfactory knowledge of present job. No knowledge of related work. Unable to absorb or retain instruction.

CO-OPERATION AND DEPENDABILITY

5 Always reliable. Excellent teamworker. Accepts and handles assignment unusually well. Requires very little supervision.

4 Usually reliable. Good teamworker. Handles assignments very well. Requires little supervision.

3 Co-operates, but sometimes only to degree he deems necessary. Average dependability. Requires average supervision.

2 Unco-operative attitude and usually undependable. Requires close supervision.

1 Very unco-operative and very poor teamworker. Very unsatisfactory and unreliable. Requires excessive supervision.

ATTENDANCE AND PUNCTUALITY

5 Very punctual. Rarely absent or late without good cause.

4 Very punctual. Seldom absent or late without good cause.

3 Generally punctual. Occasionally absent or late without good cause.

2 Frequently absent or late without good cause.

1 Habitually absent or late without good cause.

RATING

ABILITY TO PERFORM OTHER JOBS

5 Outstanding all-round employee. Performs all jobs expected of him exceptionally well and learns new jobs very fast. Considered as possessing highest skill and wide experience on generally related work.

4 Performs most jobs expected of him well and learns new jobs fairly fast. Good all-round employee. Considered thoroughly capable and experienced on generally related work.

3 Performs a few different jobs well but has difficulty in learning some new jobs. Requires at least average amount of time in becoming proficient at any new type of work. Considered only moderately versatile.

2 Slow in learning most new jobs although may perform some routine tasks in satisfactory manner. Very limited ability and normally considered only capable of performing simple tasks.

1 Exceedingly slow in learning new work of any type and generally incapable of performing even routine tasks in a satisfactory manner. Unable to follow or remember instructions except those involving very simplest of routine.

JUDGMENT

5 Has unusual ability to analyze, to evaluate, and to make prompt decisions which promote customer good will. Conclusions very sensible, intelligent, and reliable.

4 Capable of some analysis and of making most decisions relating to job. Conclusions usually sensible and reliable.

3 Judgment usually dependable on semi-routine matters. Has average ability to analyze and evaluate facts. Conclusions usually reliable although considerable time required to make decisions.

2 Judgment erratic and not very reliable. Seldom analyzes facts and conditions. Requires close supervision and guidance.

1 Has very poor ability to analyze facts and exercise independent judgment. Decisions seldom practical or sound or acceptable to customers. Requires excessive supervision and guidance.

PERSONAL CHARACTERISTICS

5 Excellent, well-balanced personality. Even temperament. Very neat and presents very good appearance. Impresses customers and employees favorably.

4 Very good, friendly personality. Generally neat and presents good appearance.

3 Has average personality. Usually neat and presents a satisfactory appearance.

2 Frequently inclined to be sullen or moody. Careless about appearance.

1 Ill-natured or unpleasant personality. Slovenly in appearance.

IV. Implications of this program

The assistance granted by the Research Coordinating Unit to the Food Service and Housing Administration Program in the development of instructional design expertise has had a very considerable impact on the work of that program. A Special Improvement Project was submitted to Allied Health in January of 1972 and has subsequently been funded in the amount of $190,000 to be spent over the coming five years with funding during the first year at $63,000 level. These funds will be used to prepare, within the existing two-year curriculum, a separate set of self-instructional packages appropriate to hospital food service. This project also funds a full-time instructor for the York Campus of the Pennsylvania State University. This project, which is intended as a pattern for other two year institutions, would simply not have been forthcoming had it not been for the work done on the development of the general model of this instructional system and the expertise developed under the grant from the Research Coordinating Unit of the Department of Education.

As increasing sophistication develops in instructional system design, the interests of the workers involved in the project begin to broaden. As a direct result of the instructional system design work undertaken under the subject grant, work is now going forward on developing other innovative curricular structures. A proposal has been submitted to Allied Health for the development of an external associate degree for dietary technicians, making use of correspondence and other media in a manner such that a student need never be involved in formal classroom settings. A similar proposal is in the process of preparation to be submitted to the Department of Agriculture. This proposal intends to use the same curriculum shell but to develop material appropriate for School Food Service Managers.

It is difficult to measure the impact of the subject grant in any quantitative way, but, in summary, it is appropriate to note that hospitality education has long been a highly traditionalist field and that these traditionalist patterns are, indeed, being broken both by work being done under the grant from the Research Coordinating Unit and by work which has been stimulated by the exposure to that project.

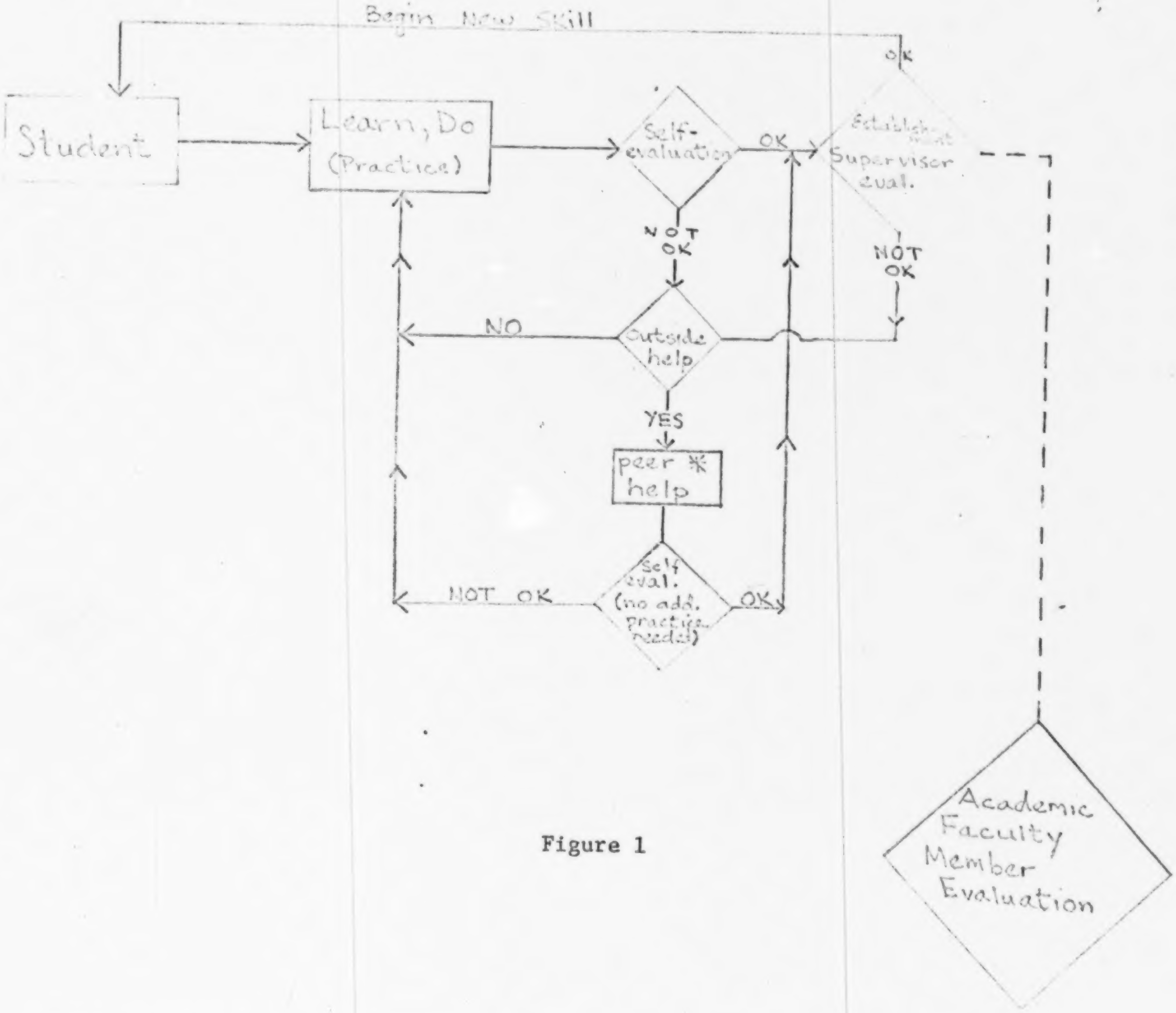
Begin New Skill
OK
Student
Learn, Do (Practice)
Self-evaluation
OK
Establishment Supervisor eval.
NOT OK
NOT OK
NO
Outside help
YES
peer ✳ help
Self eval. (no add. practice needed)
NOT OK
OK
Academic Faculty Member Evaluation

Figure 1

Model: DIAGRAM OF STUDENT BEHAVIOR PROCESS (PSYCHOMOTOR)

----- 10% of skills noted as "crucial"; spot-checked by Academic Faculty Member
_____ 90% of skills not "crucial"; evaluated by student and establishment supervisor only

✳ includes classmates and employees of the establishment

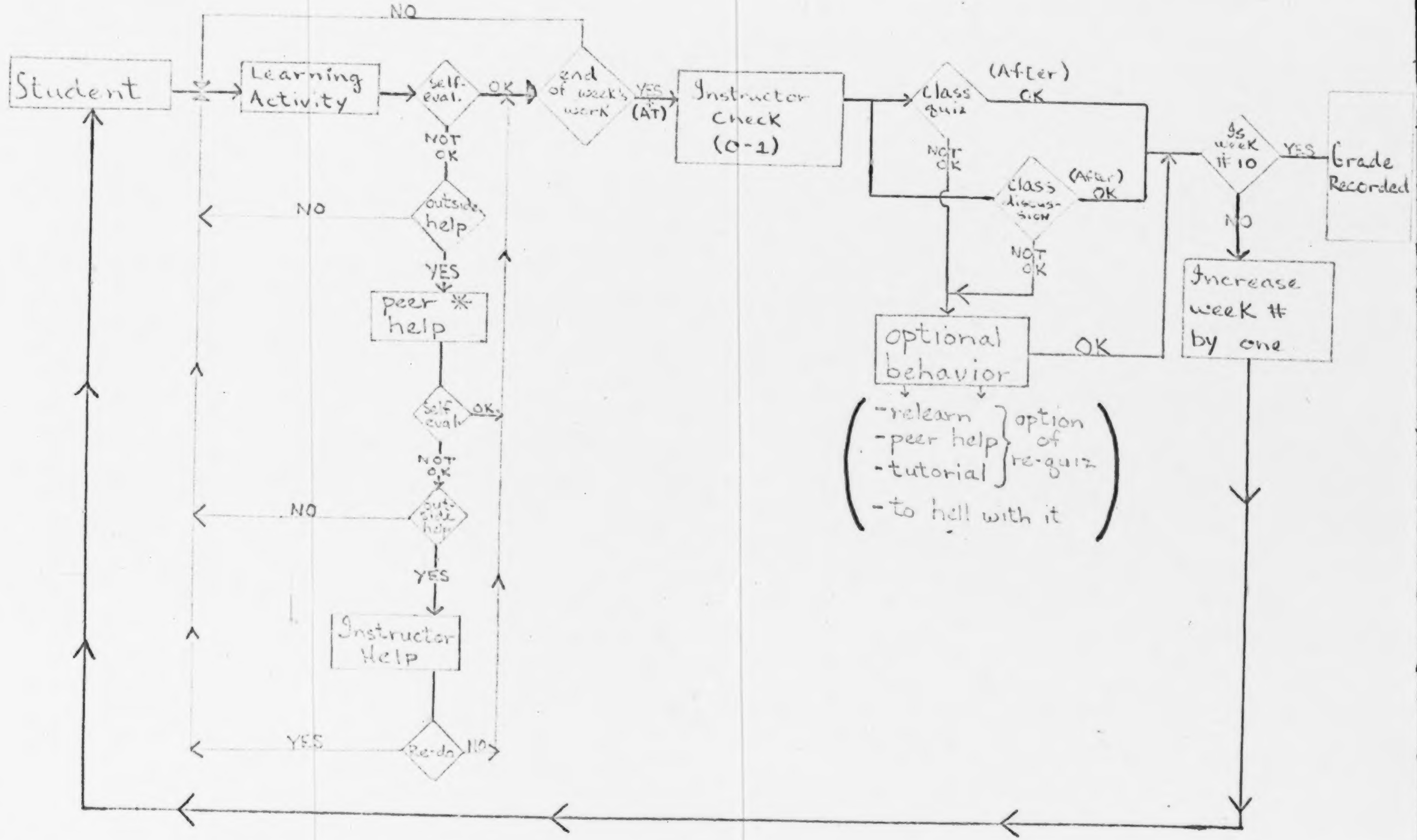
Student
Learning Activity
self-eval.
OK
NOT OK
end of week's work
YES
(AT)
NO
outside help
NO
YES
peer help *
self-eval.
OK
NOT OK
outside help
NO
YES
Instructor Help
Re-do
YES
NO
Instructor Check (O-1)
Class quiz
(After) OK
NOT OK
Class discussion
(After) OK
NOT OK
optional behavior
-relearn
-peer help
-tutorial
option of re-quiz
-to hell with it
OK
Is week # 10
YES
NO
Grade Recorded
Increase week # by one

Figure 2

Model: DIAGRAM OF STUDENT BEHAVIOR PROCESS (COGNITIVE)

* includes classmates and employees of establishment

THE PENNSYLVANIA STATE UNIVERSITY
HUMAN DEVELOPMENT BUILDING
UNIVERSITY PARK, PENNSYLVANIA 16802

College of Human Development
Room 20

Area Code 814
865-1736

September 20, 1972

Dr. Furman Moody, Director
Research Coordinating Unit
Pennsylvania Department of Education
P.O. Box 911
Harrisburg, Pa. 17126

Dear Dr. Moody:

In my recent annual report, I inadvertently neglected to specifically state that the excellent work so manifested in that report having to do with the preparation of validation instruments for our new curriculum was undertaken by Dr. Susan Weis of the Home Economics Education Department of this University.

I sincerely regret this error on my part because, without Dr. Weis' invaluable contributions, the work we are doing with this curriculum would simply not be possible. I would very much appreciate your making this letter a part of the annual report and submit, herewith, ten copies for that purpose.

Thank you for your consideration in this matter.

Very truly yours,

THOMAS F. POWERS
Professor in Charge
Food Service & Housing Administration

TFP:rw
Encl.
cc: Dr. Weis

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to Dr. Twyla M. Shear, Dr. Robert F. Mager, and Dr. Frank H. Waskey for their invaluable assistance in the design of the instructional system for Food Production Operations and in the critical review of the text. While these contributors were helpful in improving our work, they are certainly not responsible for any deficiencies which may remain.

INTRODUCTION

Welcome to the $\overline{\text{HFS}}$ Restaurant (pronounced Bar HFS). In the coming weeks you will get to know this restaurant pretty well, and, at the same time, you will be working in your own establishment. We have presented the $\overline{\text{HFS}}$ because we want you to have a look at a high standard for an operation that is fairly complicated and quality conscious. In many cases your own workplace will have better solutions to problems than those that we present in the $\overline{\text{HFS}}$. In other cases, the quality standards of the $\overline{\text{HFS}}$ may be higher than those which are judged necessary in your operation. We are at no point suggesting that the place you are working in is "wrong". We are suggesting that there is a standard of operation that is generally desirable. One of the most important things that you will do is to compare the $\overline{\text{HFS}}$ with the operation you are working in and the other operations that friends of yours in class are working with by way of seeing how many different good solutions there are to a problem--and every now and then seeing some "solutions" which really are not acceptable. You will, then, be developing a pretty cosmopolitan view of food service which recognizes the wide variety of practice and at the same time you will be developing your own personal standards--and I hope that you will make it a point to see to it that those standards are really high because quality food service will always be the name of the game.

The $\overline{\text{HFS}}$ really exists--we can't say just where--but if it did not exist we would have to invent it to serve as a vehicle for presenting the information we want you to know about food production (and in later courses about food service supervision and food service systems analysis). The $\overline{\text{HFS}}$ not only helps us to present this material, it helps us to organize it in a meaningful way that will lend itself to supporting your learning experience on the job.

It is important to notice that you may not be working on the station that you are expected to study in a given week, but you will be in a position to observe that station and to ask the person working on that station questions that seem useful to you. Therefore, you should be able to perform the learning tasks that we have assigned in the text for that station even if you are not working on the appropriate station in a given week.

In this course we are looking at what academics call "the knowledge base" connected with food production. That is to say that we have identified the important generalizations and facts that you ought to know in order to prepare yourself for your work. Let us notice that your work is not the work of a cooks. Your work is the supervision of cooks. You are not expected to become an expert cook--although the more expertise you develop, the easier your life will be as a supervisor. You are expected to develop a basic familiarity and a vocabulary which permits you to work with and supervise the highly skilled workers of a kitchen. One of the most important characteristics of the food service team is that the worker expects the supervisor to be able to step in and help when the worker gets "stuck". You had better be able to be of help to your workers when you become a supervisor or you will find yourself "stuck"--that is, you will be unable to function as a leader of skilled workers.

In succeeding courses, we will continue to look at the food service operation but at a supervisory and managerial level. There is no point in looking at food service supervision and management, however, until you have acquired the basic skills necessary to permit you to interact with the skilled workers who make up the food service team.

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ABOUT THE COURSE

This course has been especially designed to be completed while you, the student, are working in some type of food service operation. Each week you will be given a different lesson to complete before coming to the next seminar. These lessons will consist of information that you must read and master, questions related to this information that you must answer, and a variety of other activities that you must complete. (This will be explained in more detail by your instructor.)

COURSE OUTLINE (Revised)

Week 1: Introduction to HFS, Recipes, Measuring, Cooking Terms
Week 2: Sanitation and Safety (and Equipment)
Week 3: Vegetables
Week 4: Salads
Week 5: Starches and Pasta
Week 6: Soups, Sauces and Gravies
Week 7: Desserts
Week 8: Breakfast, Short Order, Sandwiches
Week 9: Meats I
Week 10: Meats II

ABOUT LESSON 1

The material in Lesson 1 includes the importance of tested, standardized recipes, the importance of accurate measuring in food production, and the necessity of understanding common cooking terms. After you complete this lesson, you should be able to do the following: read and understand recipes, convert recipes to produce a larger or smaller number of portions, know equivalent measures, and know how to measure specific ingredients.

STUDENT DIRECTIONS

1. Read pages 1-16.
2. Complete the Workbook Execerices on pages 17 and 18.
3. Check your answers with the Workbook Key on page 19.
4. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #5.
5. Read the Introduction to the $\overline{\text{H}}$FS on pages 20-22.
6. Read the $\overline{\text{H}}$FS SPECIFICS on pages 23 and 24.
7. Answer the $\overline{\text{H}}$FS questions on page 25.
8. You have now completed Lesson 1. If you still feel you do not understand any part of this lesson, consult with a classmate, a fellow worker, the establishment supervisor, or the University instructor about your questions. You will be given a quiz on the material presented in Lesson 1 during the next class seminar.

MEASURING AND RECIPES

During the last ten years or so, food preparation has developed as a science or a system of skills which is very complex. It is no longer necessary for a person to depend on personal experience and apprenticeship to master the field of cookery. Before now, learning to cook was mainly a system of trial and error. Mastery was developed only after long hours of practice. Even this experience did not provide answers to why some products could not be properly prepared.

Master chefs and experienced cooks (even your grandmother or mother) developed their skills over a long period of time. They developed their own recipes largely by trial and error or perhaps by memorizing a basic recipe and changing it as time went on. The experience of making food items over and over again eventually allowed the cook to prepare the item without measuring ingredients at all--he could tell by looking or touching that the amount he used was correct. We might say that he developed a "sixth sense" (accuracy) by practicing many hours.

You can see how difficult it would be for an untrained person to successfully produce quality food items time after time if he did not have this "sixth sense." This mastery would come only after long hours of practice, experience, and usually, mistakes. Even after this ability to combine the correct quantities without measuring was developed, it may only hold true for that one cook's recipes. And if a recipe was not written but only memorized, a person who was training to become a cook will have problems when he tries to prepare other unwritten recipes with which he is not familiar. His training was dependent upon the person who did the teaching and differed greatly from place to place and from cook to cook. In view of these facts, it is easy to understand why training took such a great deal of time and why so few "skilled" cooks were ever produced.

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There are still many people who depend largely upon this system for learning to cook. In quantity (and quality) food service operations this system is inefficient and unreliable. Therefore, it is necessary to utilize the advancements that science has made to prepare persons for skilled positions in a short period of time. Standardization in cooking is a development which has greatly assisted to achieve this end.

The standardization of measuring equipment is one area that was a result of advancement. Instead of directions that read "a teacup" of this, there have been exact terms stated--"one cup." Half of a liquid pint--eight fluid ounces--was adopted as the standard measuring cup. Its equivalent is 16 level tablespoons. The cup is graduated on one side to read 1/4, 1/2, and 3/4; the other side reads 1/3 and 2/3.

A set of standard measuring spoons consisting of one tablespoon, one teaspoon, 1/2 teaspoon, and 1/4 teaspoon was also adopted. The latter two insure accuracy when small amounts are called for and simplify the process of measuring them. The tablespoon is the equivalent of three level teaspoons.

In addition to standard measures, standard cooking terms and standard temperatures have greatly helped the food service industry to train people and to consistently produce quality products.

The standardized methods previously mentioned and the use of standardized recipes have enabled persons to produce a "standard" product. One of the most difficult jobs for a cook is recognizing a quality or standard product. Therefore, it is a necessity that such methods be used so the product can be easily evaluated.

Standardized recipes use standard measures, terms, and instructions to take guesswork out of cooking. These recipes should be carefully tested as to the quantities or weights of various ingredients, methods of combining, cooking process and time, and the yield or number and size of servings.

Is it necessary to use each recipe without any variation? The answer is no. A recipe is a written set of instructions for the preparation of a specific dish. The cook should treat recipes sometimes as an order and sometimes as a series of suggestions. Therefore, it is important to be able to distinguish between the essential and non-essential ingredients in a recipe.

What ingredients should be considered essential in a tested recipe? In general, those ingredients which determine the consistency, lightness, and tenderness of a mixture should be used in the proportion given in a recipe. In a hot cake, for example, the amount of flour, liquid, fat, sugar, baking powder and egg should be altered only on the basis of experience. A cook may discover that one type of flour may not require as much liquid as another type, consequently, he would hold back a portion of the liquid specified in the recipe.

What ingredients would be considered optional in a tested recipe? In contrast to the ingredients which determine the basic characteristics of many mixtures, there are other ingredients which may be used in greater or smaller amounts--or even left out entirely. In this group comes spices, flavoring extracts and other ingredients affecting flavor. Here the recipe can express only the preference of a small group of individuals. It is for each user to modify it to suit the tastes of the greatest number of persons being fed. If the cookbook puts onions in meat balls, but the people prefer them without onions, this change should be made. Recipes for salads and sandwich fillings usually represent merely suggestions as to combinations of ingredients. The cook should not hesitate to leave out an ingredient which is not available or to add something which seems appropriate. Amount of salt, pepper, and spice should be altered to suit the taste of the customers.

What procedures should be followed for using a recipe? In all cases, before you start to make a dish, read the recipe all the way through. If any cookery term, ingredient, or method is new to you, look up its meaning.

Next, get out and assemble on your work table all the cooking utensils you will need. Recipes indicate pan and casserole sizes. If your recipe calls for ingredients measured in both spoons and cups, you will know that you will need measuring spoons and a measuring cup. By reading your recipe you will know if you need a sauce pan, skillet, double boiler, or any other equipment.

Next, line up and measure out all the ingredients called for, being accurate in your measurements. Remember that the abbreviation "C." means cupful, "t." or "tsp." means teaspoonful, "T." or "TBSP.", means tablespoonful and "f.g." means few grains.

Why is it necessary to have standard methods for measuring ingredients? Standard measuring equipment as well as standard methods for measuring ingredients have been established. If there were no standard ways to measure ingredients, measuring equipment would not serve its purpose. For instance, if four cooks are measuring a cup of flour and each used his own method of measuring, there would probably be four different amounts of flour.

How should flour be measured? Flour should be sifted once before measuring. In filling the cup, dip flour with a spoon and fill lightly into the cup until the cup is heaping full. Cut off level with the edge of a knife. Do not dip cup into flour as this causes packing of the flour and you get more than a cup. It is important not to shake or tap the cup while it is being filled, as either will cause packing of the flour and will result in more than a cup.

What other ingredients call for special measuring procedures? There are special measuring procedures for liquids, fat, sugar, sirup or molasses. It is necessary to know the types of food that require special handling and the proper procedure to use. In all cases, remember that measurements are level.

If the dish is one that is to be baked you should next turn on the oven heat and set the oven heat control for the desired temperature.

Then you are ready to make up the dish. Here again it cannot be stressed too strongly the necessity for following the directions, exactly as given. Seemingly slight changes in procedure can spell the difference between an outstanding dish and one that is only mediocre. One must know exactly what is meant by each procedure or term given.

The following procedures are ways of combining ingredients, however, one cannot be used as a substitute for the other.

Stirring means to mix foods with a rotary motion. The main purpose is to mix the ingredients and no particular system is necessary. Beating or whipping means to manipulate by an over-and-over movement or by a fast rotary movement in order to incorporate air. It is quite obvious that if a recipe calls for whipping or beating and we merely stir the product, one is not getting the desired result due to the fact of not having incorporated air as the recipe intended. Another term is fold or folding-in. This means to incorporate or combine ingredients, such as whipped cream or beaten egg whites or sugar carefully with a cutting and folding movement to preserve air bubbles. Again, if an error is made and the mixture is beaten or whipped, an inferior product will be produced because the mixture will become tougher than it would if the ingredients were folded together gently. There are many other procedures with which one must be familiar. In all cases, if you don't know the meaning of the procedure or term, look it up before starting to prepare the product.

All recipes indicate definite cooking times or baking temperatures and time periods. Follow these explicitly for consistently successful results.

Some examples of cooking methods are as follows: Simmering--to cook in a liquid just below the boiling point. This temperature will range between 185 and 210° F. This simmering temperature is determined by the altitude at which the process will take place. Pan Broiling--to cook in a dry, hot pan, or on griddle, the same principle applying, pouring off or draining off fat as it cooks out of the meat. Pan Fry--to fry in a small amount of fat. Again, if the incorrect method is used, it can spell failure for your product.

The care the finished product receives is important. Follow closely any directions given for removing cakes from the pan, unmolding gelatin desserts, etc.

Quite often one is faced with the problem of needing more or less of a product than is specified in a recipe. Recipes may be doubled or halved according to need, if certain precautions are taken. First, make sure that all ingredients in a recipe are either increased or decreased. To that end, it is well to write the new proportions beside those on the page of the cook book. Otherwise, even the experienced cook will find that he has used half the butter and all the flour, etc.

There may be slight differences in the cooking of foods as a result of the changed proportions. For example, if half the recipe for cornstarch pudding is being made in a full-size boiler, a greater proportion of water will evaporate from the surface and the pudding may be unpleasantly thick unless a small amount of milk is added to compensate for the evaporation The milk may be added warm and stirred into the product, thereby thinning the mixture. No change is introduced in the baking time as long as the size of the unit is not altered. In other words, two pans of corn bread will cook as quickly as one pan, but if a larger amount is placed in one pan, the baking time will be increased. By observing these few precautions it is possible to prepare double a receipe or cut the recipe in half without difficulty.

It is not advisable to make more than double a recipe. If more is needed, simply prepare the number of mixes necessary.

HOW TO CONVERT RECIPES

Step 1: Divide the desired yield by the known yield of the recipe to obtain your basic FACTOR. (120 divided by 80 = 1-1/2)

Step 2: When possible, convert to weight all amounts of ingredients given in the original recipe. (If some ingredients are in such small amounts that they cannot be changed to weight leave them in measure and follow Step 3 carefully for them just as you do for weighted amounts.) Add weights of all ingredients to get the total weight of the original recipe.

Yield: 40 servings per gal. Portion: #12 scoop

	2 gallons	3 gallons
Ingredient A	1-1/4 gal.	To student: each quantity under the 2 gallon column is multiplied by 1.5.
Ingredient B	1 lb. 9 oz.	
Ingredient C	12 oz.	
Ingredient D	12 oz.	
Ingredient E	1-1/4 tsp.	
Ingredient F	14 oz.	
Ingredient G	1-3/4 qt.	
Ingredient H	2-1/2 T.	
Ingredient I	14 oz.	
Ingredient J	11-1/2 oz.	
Total Volume	2 gallons	3 gallons
Total Weight	19 lbs. 1-1/2 oz.	28 lbs. 10-1/4 oz.
Number of Portions	80	120

Step 3: Multiply the amount of each ingredient in the original recipe by the FACTOR. In the example, this means you multiply each by 1.5.

Step 4: Multiply the original total weight by the FACTOR. You may find it easier to multiply pounds and ounces separately by 1.5 and then combine them.

(19 pounds x 1.5 = 28.5 pounds)
(28 pounds 10-1/4 oz.)
(1-1/2 ounces x 1.5 = 2-1/4 ounces)

Be careful to convert fractional or decimal parts of a pound correctly when you total them.

Step 5: Add together the new weights of all ingredients for the adjusted recipe. If your answers for Step 4 and Step 5 are not the same, check your calculations and find the mistake. A mistake in arithmetic will certainly spoil your product.

Step 6: Change weights of any ingredients which can be more easily measured than weighed back to measure. (With practice, you need not change individual ingredients to weights. Your competence in multiplying or dividing by the FACTOR greatly determines this.)

Note: In most quality cook books there is a table for converting measured amounts of certain foods to weights to eliminate unnecessary measuring and weighing. In many instances it is simply easier to use the FACTOR to multiply or divide both weights and measures rather than rounding all ingredients to weights.

As has been previously stated, it is necessary that a person preparing food from a recipe understands the words used in the directions in that recipe. It will be to your advantage if you learn the following common terms:

COMMON COOKING TERMS

Bake: To cook by dry heat, usually in an oven. Griddle cakes may be baked on hot metal.

Barbecue: To roast or cook slowly, basting with a highly seasoned sauce.

Baste: To moisten with liquid, seasoning, or melted fat during cooking to prevent drying of surface and to add flavor.

Beat: To use a fast, rotary, over and under movement to incorporate air into a product.

Blanch: To cook in hot, deep fat for a short time until partially cooked but not brown. To dip in boiling water for a few minutes for the purpose of removing the skins from vegetables, fruits and nuts. In some instances, blanched foods are dipped in a cold bath to shrink or cool the product after blanching.

Blend: To mix thoroughly two or more ingredients so they lose their original properties and become an entirely new mixture.

Boil: To cook in water in which bubbles rise and break at the surface.

Braise: To brown in fat and then cook slowly in a small amount of liquid in a covered utensil.

Bread: To cover with crumbs or other suitable dry coating material.

Broil: To cook by direct heat.

Brown: To produce a brown color on the surface of food by subjecting it to heat.

Chop: To cut any food into small pieces.

Coat: To completely cover the outer surface of any food with a suitable coating material such as flour or crumbs.

Cream: Using a spoon or mechanical mixer to soften the consistency of any given food.

Cube: To cut any food into cube shaped size.

Dice: Same as cube.

Dot: To place small pieces of such foods as butter or cheese over surface of a food product to be baked or broiled prior to putting in oven.

Fold: To combine two or more ingredients together with a cutting and folding motion.

Fricassee: To cook by browning in a small amount of fat followed by stewing or steaming. Similar to braising.

Frying: To cook in fat.

1. Pan frying or sauteeing---Small amount of fat used.
2. Shallow frying---Food partially covered with hot fat.
3. Deep fat frying---Food surrounded by hot fat.

Garnish: To add suitable accessory to a food item for color and eye appeal.

Grate: To rub any food over a rough surfaced instrument, such as a grater, to break it into small pieces or shreds.

Grill: To cook on a griddle, draining or scraping off fat as it collects.

Marinate: To place in oil, cream, milk, vinegar, French dressing or lemon juice for a period of time to alter the flavor, improve the flavor, or soften the product.

Pan-Broil: To cook in dry, hot frying pan, pouring off fat as it collects.

Parboil: To partially cook in boiling water.

Pare: To remove the skin or rind from any food by cutting off with a knife or other suitable instrument.

Poach: To cook food in a simmering liquid.

Puree: To press food through a seive or a food mill.

Render: To melt and separate fat from meats by heating slowly at low temperature.

Roast: To cook by dry heat, usually in an oven.

Roll: To cover pieces of food with flour, cornmeal or crumbs.

Sautee: To cook in a small amount of fat on top of the stove.

Scald: To heat a liquid to a point just below the boiling point.

Score: To cut shallow slits in a food item, across the top or in a pattern.

Shred: To cut or tear in small pieces or strips.

Sift: To run dry ingredients through a sifter to remove lumps or impurities.

Simmer: To cook in a liquid just below the boiling point at a temperature of 185° F. to 210° F. Bubbles form slowly and break below the surface.

Steep: To add tea or coffee to boiling liquid which has just been removed from the source of heat and which is allowed to stay in the liquid for a given period of time.

Stew: To simmer in a small quantity of liquid.

Stir: To blend two or more ingredients, using a circular motion with a spoon or other suitable instrument.

Toast: To brown any food by direct heat either over or under the direct source of heat.

Toss: To mix lightly two or more ingredients.

Truss: To bind or fasten securely. Used mainly in reference to poultry.

Whip: To beat rapidly in order to increase volume by incorporating air.

WEIGHTS AND MEASURES

Measuring Equipment

The standard measuring cup is of 1/2 pint or eight ounce capacity. Cups can now be had which are based on United States standards and are so labeled. Subdivisions are marked on the cup for measuring one-fourth, one-half, three-fourths, one-third, and two-thirds cup. The majority of cups do not show smaller subdivisions.

Individual cups for fractional measurements as well as full cup measurements are also available. The fractional cups, if standardized, permit more nearly accurate measurements than can be obtained in the cup with subdivisions.

Measuring spoons are standardized as well as measuring cups. Sets of spoons which measure one tablespoon, one teaspoon, one-half and one-fourth teaspoon can be obtained. Sixteen level tablespoons are required to fill one cup, and three level teaspoons are equal to one level tablespoon.

How to Measure Staple Foods

Granted that accurate measuring equipment is available, measuring problems still exist. Inaccuracies may occur through the manner in which the equipment is used. Also, variable and individual methods which may be used tend toward producing less uniform results than may be obtained when certain fairly well standardized methods of measuring are used.

Flour. Flour should be sifted once before measuring. Sifting should be fairly recent, since sifted flour tends to pack on standing. The quantity of flour sifted at one time is best limited to an amount which will not tend to pack.

In filling the cup, dip flour with a tablespoon and fill lightly into the cup until the cup is heaping full. Cut off level with the edge of a knife. It is important not to shake or tap the cup while it is being filled, as either will cause packing of the flour. Fractional cups are measured by leveling as accurately as possible to the mark. In filling tablespoon or teaspoon, fill spoon heaping full by dipping into flour. Cut off level with the edge of a knife. Half spoonfuls are measured by cutting in half lengthwise and scraping out half. Quarter spoonfuls are measured by cutting in half crosswise into two equal portions and scraping out half.

Liquid. Place cup upon a flat surface and fill as full as the cup can be filled without overflowing or spilling the contents when it is carefully lifted.

Fat. Solid fats should be removed from the refrigerator long enough before measuring to permit them to become plastic. Very hard fats are difficult to measure accurately. Press the fat into the cup so that air spaces are forced out. Cut off level with the edge of a knife. In measuring fractional cups, cut off top surface at the division mark. For measurements up to one-quarter or one-third cup, it is probably easier and quicker to measure by level tablespoonfuls. The water displacement method may also be used. To measure one-half cup of solid fat, for example, the measuring cup is half filled with water and then enough solid fat is added to bring the water level to the one cup mark.

Sugar.
1. Granulated--Fill cup as for flour, omitting sifting.
2. Brown--Roll out lumps. Press sugar firmly into the cup. Measured in this way, one cup of brown sugar is approximately equal to one cup granulated sugar.
3. Confectioners'--Roll out lumps, then sift. Measure as for flour. One cup of confectioners' sugar is slightly heavier than one-half cup of granulated sugar. About one and three-fourths cups of confectioners' sugar is equal to one cup granulated sugar.

Sirup or Molasses. Place cup upon a flat surface. Fill completely full. Because of the thickness of the liquid it may tend to round up higher than level full. Cut off level with the edge of a knife. Measure spoonfuls by pouring sirup into spoon and cutting off level with the edge of a knife.

Care should be used to avoid spilling fats and sirups on the outside of the cup or spoon.

Symbols for Measurements

t = teaspoon

T = tablespoon

c = cup

f.g. = few grains

Table of Common Measurements Used in Food Preparation

3 t = 1 T.

16 T = 1 c.

8 T = 1/2 c.

4 T = 1/4 c.

12 T = 3/4 c.

5-1/3 T = 1/3 c.

10-2/3 T = 2/3 c.

2 c. = 1 pt.

4 c. = 1 qt.

4 qts. = 1 gal.

2 T = 1 liquid oz. or 1/8 c.

8 oz. = 1 c. or 1/2 pt.

This table is useful enough to justify memorizing it. The following table of measurements and weights will also be found valuable because of its usefulness.

Approximate Number Cups or Units in a Pound of Some Common Foods

2-1/4 c. granulated sugar

4 c. family or bread flour

4-1/2 c. pastry flour

4 c. grated cheese

2 c. butter or other fat

About 10 average eggs (without shells)

A Guide to Common Can Sizes

Can Sizes	Approximate Cups Per Can	Average Net Weight
8 oz.	1	8 oz.
No. 1 (picnic)	1-1/4	10-1/2 oz.
No. 300	1-3/4	15-1/2 oz.
No. 303	2	1 lb.
No. 2	2-1/2	1 lb. 4 oz.
No. 2-1/2	3-1/2	1 lb. 13 oz.
46 oz.	5-3/4	46 oz.
No. 10	12	6 lb. 9 oz.

LADLES

Ladles may be used in serving soups, creamed dishes, stews, sauces, gravies, and other similar products.

The following sizes of ladles are most frequently used:

1/4 cup (2 ounces)
1/2 cup (4 ounces)
3/4 cup (6 ounces)
1 cup (8 ounces)

SERVING SPOONS

A serving spoon (solid or perforated) may be used instead of a scoop. Since these spoons are not identified by number, it is necessary to measure or weigh food in the spoons used to obtain the approximate serving size desired.

SCOOPS

The number of the scoop indicates the number of scoopfuls it takes to make one quart. The tables below shows the numbers and approximate capacities for scoop sizes commonly used in portion control.

Scoop Number	Level Measure	Ounces
6	2/3 cup	5
8	1/2 cup	4
10	2/5 cup	3-1/2 - 4
12	1/3 cup	2-1/2
16	1/4 cup	2
20	3-1/5 tablespoons	
24	2-2/3 tablespoons	
30	2-1/5 tablespoons	1
40	1-3/5 tablespoons	

CONVERSION OF TEMPERATURES

Conversion of Centigrade to Fahrenheit

C° times 9/5 plus 32 equals F°

Conversion of Fahrenheit to Centigrade

F° minus 32 times 5/9 equals C°

WORKBOOK EXERCISES

Lesson 1

1. In what three ways has standardizing affected the food service industry?

2. Fill in the blanks:

A. One quart = ______ounces.

B. One pint = ______cups.

C. One cup = ______ounces.

D. One gallon = _____pints.

E. One tablespoon = ____ teaspoons.

F. One cup = ________ tablespoons.

3. Matching:

______1. Beat

______2. Blend

______3. Fold

______4. Stir

______5. Whip

A. To blend two or more ingredients, using a circular motion with a spoon or other suitable instrument.

B. To use a fast, rotary, over and under movement to incorporate air into a product.

C. To mix thoroughly two or more ingredients so they lose their original properties and become an entirely new mixture.

D. To beat rapidly in order to increase volume by incorporating air.

E. To combine two or more ingredients together with a cutting and folding motion.

4. Convert this recipe to produce 75 portions:

Chocolate Souffle - 50 portions (202)

	Ingredients	Weight	Volume	New (Volume) Measure
A.	Butter	8 oz.	1 c.	
B.	Flour	5-1/2 oz.	1-1/3 c.	
C.	Salt	1 tsp.	1 tsp.	
D.	Milk	3 lb.	1-1/2 qt.	
E.	Chocolate, unsweetened	8 oz.	1 c.	
F.	Sugar	10-1/2 oz.	1-1/3 c.	
G.	Egg yolks	10 oz.	1-1/4 c.	
H.	Egg whites	1 lb. 2 oz.	2-1/4 c.	
I.	Cream of Tartar	2 tsp.	2 tsp.	
J.	Sugar	10-1/2 oz.	1-1/3 c.	
K.	Vanilla	3/4 oz.	1-1/2 T.	

KEY TO WOORKBOOK EXERCISES

Lesson 1

1. Standardized recipes, standardized measures, and common or standardized cooking terms have aided in producing consistent quality products.

2. A. 32
   B. 2
   C. 8
   D. 8
   E. 3
   F. 16

3. Matching
   1. B
   2. C
   3. E
   4. A
   5. D

4. New measure
   A. 1-1/2 c.
   B. 2 c.
   C. 1-1/2 tsp.
   D. 2-1/4 qt.
   E. 1-1/2 c.
   F. 2 c.
   G. 1-7/8 c.
   H. 3-3/8 c.
   I. 1 T.
   J. 2 c.
   K. 2-1/4 T.

THE H̄FS: A MODEL RESTAURANT

At the end of each lesson in this course, there will be a section called "H̄FS SPECIFICS" and one called "H̄FS EXERCISES". The H̄FS SPECIFICS will further explain the types of things you read about in each lesson and will apply them to a model restaurant (The H̄FS).

The H̄FS is a 300 seat restaurant based on a Western theme (thus, the name "Bar HFS"). It serves breakfast, lunch and dinner meals, has a 50 seat cocktail lounge with a complete bar set-up, and two smaller banquet rooms that can accomodate private parties of up to 50 persons each.

Like all privately owned establishments, the main purpose of the H̄FS is to make a profit so that it can stay in business. This can be done only if the restaurant manager and the other H̄FS employees use the available resources in the best way possible and if they satisfy the needs of the customers at the same time. Since the H̄FS is located in an area where there are many other restaurants that compete with it for customers, special emphasis must be placed upon meeting the demands of the customers. If this is not accomplished, there is nothing to stop the people from going to a restaurant down the street.

Before looking at the H̄FS resources, it should be understood that like most food service operations, the H̄FS does not have a large profit margin. Reasons for this are as follows:

1. It has a large investment in equipment.
2. It has rather large fixed expenses (wages, gas, electricity and so on).
3. In relation to #'s 1 and 2, the volume of sales is small.

In view of these three facts, the necessity of making the most of available resources is clear.

There are four major classes of resources that are available to the H̄FS (or any food service operation) that must be managed to create a profit. They are man (labor), money (capital), machinery (equipment and physical plant), and materials (food and supplies). The way in which the manager and his staff use these resources will determine two things: 1) the degree of customer satisfaction, and 2) the amount of profit the H̄FS will recover from the operation.

The interrelation of resources and the management of them is illustrated in the following example:

> Assume that a restaurant has sufficient equipment to produce large quantities of food. If this same restaurant does not have enough waitresses to provide efficient, courteous service to the customers, the customers will not return to that restaurant. Lack of customers will eventually put the operation out of business.

The exact opposite of the above situation is also a problem:

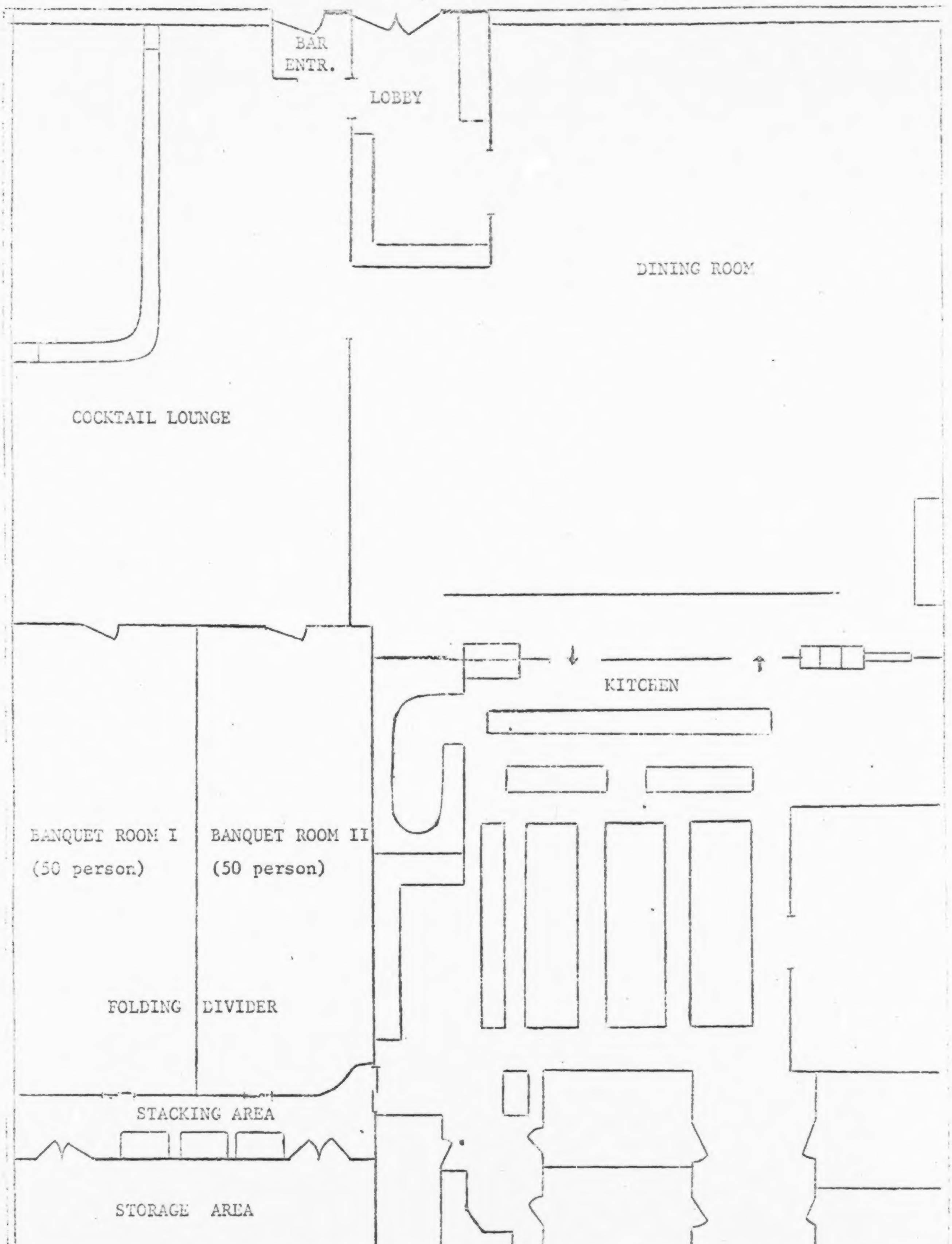
> Assume that the restaurant has enough waitresses to serve the customer, but that its equipment is old and does not have the production capacity to supply the necessary quantities of food. The result is this: some of our resources (the waitresses) will be standing around waiting for food to serve to the customer, and the customer will become very nervous and irritated that his meal is taking so long to get to him.

Because of the importance of proper resource management, these four resources will be discussed further in the H̄FS SPECIFICS at the end of each lesson. At this time it is important for you to see that without using resources in the best way possible, a food service operation will not be able to make a profit.

A common starting point for all food service operations is a menu that will satisfy the desires of the intended customer. The H̄FS is no exception. It is the menu that determines the amount and kind of necessary equipment and the physical layout of this equipment, the number of employees and the skills they need, and the amount of money needed to operate the business.

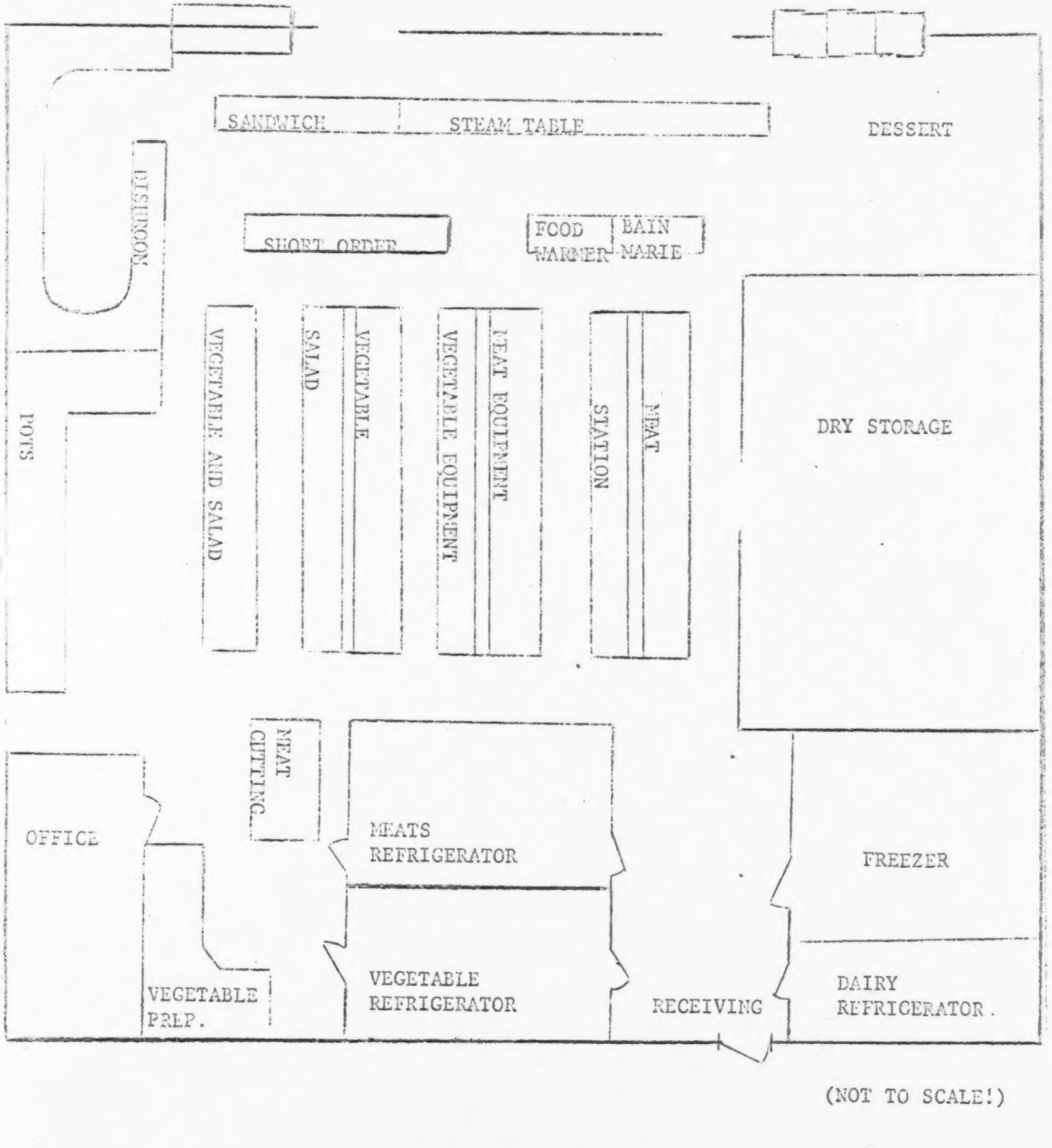
The menu also determines how the work units, which will be referred to as "stations", are organized in the kitchen so as to create a logical and efficient flow of food products to the customer. From the HFS 850 course outline, one can see that each lesson deals with various activities that take place in a typical restaurant or food service operation. In lessons 3 through 10, the emphasis is upon food production problems that a food service worker may encounter. The H̄FS SPECIFICS for these lessons will tell you which worker performs certain tasks and will show you the equipment he uses. You will be required to make comparisons and contrasts between the HFS operations and those of your work place. Such contrasts are important to note since they will present differences between an "ideal" situation and a practical situation. (NOTE: When there is a difference between what takes place in your work place and what this course teaches, do not condemn your work place. This will only cause unpleasantness for you and friction will develop between you and the people with whom you work. Instead of telling them they're wrong, try to discover WHY the situation is handled like it is and make notes in your workbook as to how some things could be changed.) These differences that you record will be used as discussion points in the class seminar.

FIGURE 1.1 : HFS OVERALL LAYOUT (NOT TO SCALE)



BAR ENTR.
LOBBY
DINING ROOM
COCKTAIL LOUNGE
KITCHEN
BANQUET ROOM I (50 person)
BANQUET ROOM II (50 person)
FOLDING DIVIDER
STACKING AREA
STORAGE AREA

6/15/72 MER 2284: SW


SANDWICH
STEAM TABLE
DESSERT
DISHROOM
SHORT ORDER
FOOD WARMER
BAIN MARIE
VEGETABLE AND SALAD
SALAD
VEGETABLE
VEGETABLE EQUIPMENT
MEAT EQUIPMENT
STATION
MEAT
DRY STORAGE
POTS
MEAT CUTTING
OFFICE
MEATS REFRIGERATOR
FREEZER
VEGETABLE PREP.
VEGETABLE REFRIGERATOR
RECEIVING
DAIRY REFRIGERATOR.

(NOT TO SCALE!)

FIGURE 1.2: HFS KITCHEN

5/30/72 MER 2254: SW

HFS SPECIFICS: LESSON 1

The HFS is a restaurant that relies heavily on internal controls such as standardized recipes, predicted yields, and portion control, to make a profit from the food it sells. In terms of the four available resources, the system can be explained as follows: The worker must prepare food products using certain equipment. The worker is paid a wage, food products cost money, and the equipment must be bought and operated which creates bills. If the worker makes a mistake, say in making pie dough all of the resources have been affected. Assume the worker added 3 tablespoons of baking powder instead of 3 teaspoons of baking powder and did not realize his mistake until after the pie crusts were baked. The worker's mistake wasted time since his efforts would have to be repeated (which means he still collects money for putting in time even though he will accomplish one job in twice the normal amount of time that job takes), certain food products have been wasted which costs the establishment money, and since the oven and mixer were used in making the first pie crusts, the cost of using them was also wasted since new pie crusts must also be prepared. On the other hand, if his mistake was not discovered until after the pies were served, the customer satisfaction would decrease because the pie tasted lousy, and the establishment's reputation and business would decline.

The above example is one that explains the necessity of following a recipe. Had the worker been more observant in the first place, none of the resources would have been misused. An inferior product may be the result of not following the recipe.

Likewise, if a cook does not measure recipe ingredients exactly, does not combine the ingredients properly, and/or fails to follow the proper cooking instructions, the final product may not be of high quality. In view of the importance of recipes, measuring, understanding recipe terms, and cooking instructions, it is clear that the HFS cooks must practice these procedures.

The H̄FS cooks sometimes have to convert recipes to produce a larger or smaller yield than that for which the recipe is written. More often, H̄FS recipe cards include a chart that represents volumes of 50, 100, and perhaps 200 portions.

Converting recipes requires not only a knowledge of multiplying or dividing but also an understanding of equivalent measures. For example, if a recipe that yielded 100 servings had to be decreased to serve 50, and one ingredient was 1 Tablespoon lemon juice, the person must know that 1T = 3 tsp. in order to know that 1 1/2 teaspoons of lemon juice must be used. Failure to extend or decrease a recipe properly may yield a poor finished product.

If, while preparing a certain product, the cook does not understand any part of the recipe, he asks either the head cook or the H̄FS dietitian to explain what is not clear. This prevents the possibility of making an unnecessary error. This idea is one you (as a trainee) should practice frequently. Nobody expects you to know everything--if you did you wouldn't be there. Remember: It's better to ask a stupid question than to make a stupid mistake.

On a typical day in the H̄FS, most station cooks follow these procedures:

1. When he (or she) is ready to begin preparing the day's menu items, he first obtains the worksheet for his station. The worksheet tells him the foods he must prepare for lunch and dinner and the amounts he should prepare. (All breakfast items are made to order.)

2. Along with the worksheet, he is given all the recipe cards he will need to prepare these food products.

3. Depending upon the amount of necessary preparation and cooking time, the cook may work on a number of food items at a time so that they are all ready for serving when needed. He may determine his own time schedule or it may be written for him by a superior. The time schedule is an approximate one that helps the cook to gear his progress to meet the serving time.

4. In the process of preparing food items, the cook may come across recipe terms that are not familiar to him. Since his understanding of these terms will determine the success of the finished food product, it is his responsibility to find out the meaning of the terms and how to perform the activities associated with them. A fellow worker, the head cook, or a dietitian are usually his most reliable resources.

HFS EXERCISES

1. Are the recipes used in your establishment standardized? (Describe how you know if they are or are not.)

2. How could the recipe system in your operation be improved?

3. Who in your work place determines how much of a certain recipe should be produced?

4. Who is responsible for converting a recipe if a larger amount must be made?

5. If there are things about a recipe that you do not understand, who in your establishment do you ask to explain things?

ABOUT LESSON 2

The material in Lesson 2 deals with basic principles of accident prevention and sanitation. After you read this lesson, you should know and apply the rules to prevent machine injuries, burns, falls, strains, food poisoning, and food contamination. The emphasis is placed upon what preventive measures you, as a food service worker, can take to make your establishment safer and more sanitary.

STUDENT DIRECTIONS

1. Read pages 1-12.
2. Complete the Workbook Exercises on pages 13 and 14.
3. Check your answers with the Workbook Key on page 15.
4. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #5.
5. Read the HFS SPECIFICS on pages 16-18.
6. Answer the HFS questions on pages 19 and 20.
7. On page 21 you will find a list of SKILLS appropriate for this lesson. Practice these SKILLS whenever possible. When you feel you have mastered any one SKILL, go to the work place supervisor and perform the SKILL. If he feels you have performed the SKILL adequately, he will complete the checklist form, sign and date it, and will give it to you. You must hand this paper in to your class instructor at the next class meeting. This is the procedure to follow for all SKILLS.
8. You have now completed Lesson 2. If you still feel you do not understand any part of this lesson, consult with a classmate, a fellow worker, the establishment supervisor, or the University instructor about your questions. You will be given a quiz on the material presented in Lesson 2 during the next class seminar.

SAFETY AND SANITATION

This lesson will deal with an overview of the basic principles of safety and sanitation in a food service operation. You, as a food service employee, must know and apply the concepts discussed in this unit. Failure on your part to practice these general rules may cause you physical harm or may cause your work place to gain a bad reputation.

SAFETY AND ACCIDENT PREVENTION

Accidents in a food service operation can generally be prevented if the working conditions are safely maintained and if the worker develops safe working habits. The worker can prevent accidents generally by using all tools, utensils, and equipment properly, by wearing appropriate clothing, by maintaining an orderly work station, and by practicing safe work habits when lifting and moving items. In order to accomplish the above, the following specific rules must be applied:

1. To prevent cuts from knives:
    - A. Always use the right knife for the job. Knives are designed with specific uses in mind. The style of the blade and its size makes it easy for the worker to perform the task for which that particular knife was made. If the worker uses the wrong knife for the job, not only is he making it more difficult for himself, but he is also risking a serious cut. The right knife for the job makes the task easier, not harder for the worker.
    - B. Know how to use the knife. Beside being able to choose the right knife for the job, the worker must use the knife properly. One of the main causes of knife cuts is improper use of the knife. When possible, cut away from yourself. Keep hands and fingers clear of the blade. To prevent cuts if the knife slips, do not put your hand in the line of cutting or near it.

C. Always use a sharp knife. Many people hesitate to use sharp knives since they regard them as being dangerous. This is untrue since a sharp knife requires less effort to use than does a dull one. Using a dull knife can be very frustrating to the worker and frustration causes carelessness. If a worker knows how to use a knife properly to begin with, the sharpness of the blade is a definite advantage instead of a drawback. (Learn how to sharpen knives properly.)

D. Keep knives in their proper place or in plain view. When a knife is stored properly with the sharp edge down, there is little chance that the next person to use it will get cut due to your carelessness. If a knife is set aside for a while, be sure it can be seen by other workers. Do not put it where it can be knocked off the workbench by a person walking by.

E. If a knife falls, don't try to catch it. It is better to let the knife break than to seriously cut yourself. A knife can easily be replaced--not so with a worker!

F. Use a cutting board. Cutting boards are designed so that they do not slip around on the work surface. They also eliminate slipping of the item being cut. It is also better to use a cutting board than to permanently damage the surface of a work table that was not intended for that purpose.

G. Always pay attention to what you are doing. A serious cut may be the result of talking to someone or looking around when you should be concentrating. If you have to socialize, don't cut at the same time.

H. Never argue or play games with a knife in your hands. A sharp knife is a dangerous weapon. It is not meant to be handled by a fool or a careless person.

2. To prevent cuts from broken glass and dishes:

   A. Never handle broken dishes or glass with your bare hands. Sharp edges and small slivers can easily give you a cut you weren't expecting. Remove broken articles with a broom and dust pan--any remaining glass should be carefully picked up with a wet paper towel and properly disposed of.

   B. Dispose of broken glass in a special container. This prevents the possibility of harming another person who may not be aware of its presence.

   C. Never pass broken glass to another person. By allowing a broken item to get past you, an innocent person may fail to see the danger, thus risking an unnecessary injury.

3. To prevent strains:

   A. Lift items with your legs rather than with your back. It is not childish to bend your knees. By bending you use your legs as a lever to easily lift heavy loads. Bending at the waist requires your back to do all the work. A bad strain could keep you out of work for a lengthy period of time.

   B. Ask for help with heavy loads. If you think an item is too heavy for you, don't be afraid to get help from a co-worker. After all, you're a food service worker, not a circus strongman!

   C. Use a properly loaded dolly or cart. To move many items, it is to your benefit to use a cart or a dolly since this saves work and trips. Be sure not to overload the cart or dolly--make sure you can easily maneuver it and can see where you're going.

4. To prevent burns:

   A. Learn what areas are possible sources for burns and scalds and be particularly careful when you are working with or near them. Your general awareness can prevent serious injury.

B. Warn others when something is hot. This is a good habit to develop since others will know to avoid bumping into you. This prevents both you and them from possible burns.

C. When you operate any heating equipment, know what you're doing. You should know recommended pressures for steam equipment. Avoid exposed steam pipes. Open steam valves slowly. If you find a leak in a steam pipe, report it immediately to your supervisor.

D. Be careful when you are using a boiling kettle. If it has a lid, lift the back of the lid away from you so that the escaping steam does not hit you in the face. When stirring, use a long-handled utensil. Use hand protection when stirring or moving a hot kettle. Do not fill the kettle to the top since this makes it difficult to stir and handle.

E. When using the deep fat fryer fill the kettle with fat only to the line. If you overfill the container you encourage splashing and spilling of the hot fat. A basket should be used to lower food into the fat since dropping food in creates splashing and encourages burns.

F. Be careful when lighting a gas oven or burner. Always check pilot light before turning on the gas. Make sure the range is properly ventilated and gas oven or burner is off before lighting the pilot. After pilot is on, stand back when turning on gas.

G. Always use dry towels or hot pads to carry hot containers. Never use your apron since it may not be adequate protection. Wet towels or pot holders should not be used since they conduct heat.

H. Make sure the handles of pots and pans on the range are turned away from the aisle. A serious burn could result if the pan is knocked from the range and spills over the person.

5. To prevent falls:

    A. Always wear proper footwear. Rubber soled shoes are recommended since they provide better traction than leather or composition soles. High heeled shoes should not be worn.

    B. Wipe up what you spill on the floor immediately. If you just leave it, it is a hazard for another person who may not see the wet area and slip.

    C. Pick up anything you drop on the floor. Again, this is a potential hazard to your co-workers.

    D. If you see a hazard developing, report it to your superior. Traffic area hazards should be corrected immediately.

    E. After mopping a floor with soapy water, dry mop the area. If an area is still wet, put up a sign in the area that is big enough to be seen.

    F. Be careful when climbing stairs. Stairways should be properly lit. You should use the handrail whenever possible. Even when carrying things, make sure you can see your feet.

    G. Be careful when using a ladder. In the first place, use the ladder! Do not stack boxes or use a chair to reach items. Make sure the ladder is sturdy and will hold your weight. Place the ladder directly in front of what you're after. Avoid having to reach while you're off-balance. Do not put up the ladder in a place where someone may trip over it (especially while you're standing on it!).

6. To prevent machine injuries:

    A. Do not operate any machine unless you have been trained to operate it. Always follow machine directions. Although machines save time and energy, they can be very dangerous if not properly operated.

    B. Do not wear loose clothing, jewelry, or anything that can snag on the machine.

    C. If the machine has safety guards, make sure they are in place before you turn on the machine.

D. Make sure the power switch on the machine is in the "off" position before you plug the power cord into the electrical outlet.

E. Always make sure your hands are dry and that you are standing on a dry surface before plugging in a power cord.

F. Use a plunger to force food into a grinder--not your hands.

G. If a machine jams, turn it off before you try to free it. Then use only the proper tools to free the machine.

H. Report any machine that malfunctions. Do not try to fix it yourself.

I. Always disconnect the machine from the power source before you begin to clean it. Then, if you accidentally turn the machine on, no damage is done.

In addition to the part a worker plays in accident prevention, the establishment can also assist in lowering the accident rate in the following ways:

1. By providing proper lighting.
2. By keeping work areas uncluttered.
3. By seeing that there are no obstacles in traffic areas.
4. By having non-slip floor surfaces.
5. By quickly fixing all things reported by employees as potential hazards.

SANITATION

Since you have previously completed a three credit course in Sanitation, this section of Lesson 2 will serve as a review to you.

For these purposes, the following four aspects of sanitation that apply to the food service worker will be considered:

1. Personal cleanliness, health, and work habits.
2. Food handling and storage.
3. Cleaning equipment.
4. Cleaning other parts of the food service facility.

Your personal cleanliness, health, and work habits have a great effect upon the maintenance of sanitary conditions where you work. Learn and apply these rules:

1. Always keep your hands clean and out of direct contact with food as much as possible. Your hands carry germs that can infect the food and may create illness for the customers.
2. Never handle food if you have cuts or infections on your hands.
3. When tasting food, use a clean spoon for each taste or use a tasting dish. Once you have used a spoon, you may transfer germs from it into the food if it is used again.
4. Always grasp cooking utensils, eating utensils, and serving plates by the part that does NOT come in contact with the food.
5. Always wear a clean uniform and a clean apron. Germs can be transmitted from your clothing to the food.
6. If you are sick, don't go to work. The germs from your illness can contaminate food.

7. Never smoke in the food preparation area. If you do smoke, wash your hands before going back to work. Your hands pick up germs from your mouth when you smoke and can infect the food.

The second area of concern for the food service worker is that of handling and storing foods. Both in their raw and cooked stages, foods can become contaminated unless proper precautions are taken. The following rules should be learned and practiced:

1. Always keep pests away from food. Flies, roaches, and other pests are carriers of germs and should be exterminated. Never keep poisons near the food or in a place where they might be mistaken for harmless spices or food products used in cooking.
2. Always employ processes that control the growth of germs in food.
    - A. By keeping foods stored at temperatures below 45° F., growth of germs is retarded. Since germs need warmth, water, and food to grow, refrigeration limits growth. Reducing the temperature of the food within two hours is necessary and can easily be accomplished by storing food in shallow pans. Although cooling does not kill germs, it limits their growth.
    - B. Once foods have set at room temperature for any length of time, even cooling does not do much good. Room temperature (or any temperature between 45° F. and 140° F.) is ideal for the growth of harmful germs and bacteria. At these temperatures the growth is very great.
    - C. At temperatures above 165° F., most disease-causing bacteria are killed. However, even if they are killed, the poisons that they produce are not destroyed and still contaminate the food. Some bacteria and germs can survive temperatures from 140° F. - 165° F., but most are killed above this range.

3. Food products must be properly refrigerated. The idea of PROPER refrigeration includes:

   A. Packing food loosely to allow the air to circulate among food products and making sure vents are not blocked.

   B. Covering food to protect it from dripping, from taking on or giving off odors, and from drying out.

   C. Placing prepared foods above raw foods since the moisture from raw foods that carries germs should not be allowed to contaminate prepared foods.

   D. Opening the refrigerator door only when necessary to reduce a change in the temperature.

   E. Checking the temperature of the refrigeration unit daily.

   F. Defrosting the refrigeration unit before 1/4" of frost develops on the elements so that a maximum amount of cooling takes place.

The third area of concern for the food service worker is that of properly cleaning the equipment used for food preparation. Since the equipment comes in direct contact with the food, a piece of equipment that is not properly sanitized carries bacteria and germs that are potential hazards to the food and the customer.

Some general tips for cleaning the equipment you use are as follows:

1. Clean the equipment as soon as possible after it has been used. Waiting makes it more difficult to remove food particles since they dry out and stick to the equipment.

2. Learn the procedures for cleaning all equipment, especially those machines with movable or removable parts.

3. Use only the proper types of cleaning fluids or powders that are specified for cleaning that piece of equipment. Certain abrasive materials and cleaners should not be used unless indicated by the manufacturer.

Now read pages 24-28 in the booklet Sanitation of Food Service Establishments that is included in this lesson.

The final area of concern is cleaning other parts of the food service facility. This category will include pots and pans, dishes, silverware, and cooking utensils.

Read pages 17-23 in the sanitation booklet included with this lesson.

Keep in mind that the same general rules hold true for this section that were mentioned in the cleaning of equipment. In addition, when you handle clean dishes and utensils, do not touch the area that will come in contact with the food.

A reminder: The most important step in sanitizing any piece of equipment or any utensil is the RINSE process. The act of washing merely dissolves food particles into solution. The rinse serves to remove the dissolved solution and sanitize the item by using water of a high temperature. This is why it is so important to maintain a high temperature rinse so that any remaining bacteria will be killed.

RULES FOR ALL FOOD SERVICE WORKERS

1. Report every injury at once, regardless of severity, to your supervisor for first aid. Avoid delay.

2. Report all unsafe conditions. Look for damaged chairs, tables, or electric fixtures.

3. Understand the safe way to perform any task assigned to you. If in doubt, see your supervisor. Never take unnecessary chances.

4. Aisles, passageways, stairways must be kept clean and free from obstructions. Do not permit brooms, pails, mops, cans, boxes, etc., to remain where someone can fall over them. Wipe up any grease or wet spots from stairs or floors at once. These are serious falling hazards.

5. Walk, do not run, in the hall, down stairs, or around work areas. Be careful when passing through swinging doors.

6. Wear safe, sensible clothes for your work. Wear safe, comfortable shoes, with good soles. Never wear thin-soled or broken-down shoes. Do not wear high-heeled shoes for work. Ragged or over-long sleeves or ragged clothing may result in an injury.

7. If you have to reach for a high object, use a ladder, not a chair or table. Be careful when you have to reach high to fill coffee urns, milk tanks, etc.

8. Keep floors clean and dry. Pick up any loose object from the floor immediately to prevent someone from falling.

9. Do not overload your trays. Trays should be loaded to give good balance. An improperly loaded tray can become dangerous.

10. Dispose of all broken glass and china immediately. Never serve a guest with a cracked or chipped glass or piece of china. Check all silverware.

11. Help new employees to work safely on the job. Show them the right way to do the job--the safe way.

12. Get help with heavy lifting. Crouch down, don't bend over. Lift with the legs, and keep the back straight.

13. Be familiar with the fire alarm boxes and the use of fire extinguishers and equipment.

RULES FOR HANDLING FOOD PROPERLY

1. Keep perishable foods under refrigeration until used.
2. Keep hot foods hot (140° F. or above) and cold foods chilled (40° F. or less).
3. Remove left over foods from Bain Marie, and/or other food warming devices immediately after each feeding period.
4. Cool left over foods at room temperature promptly and place under refrigeration as quickly as possible.
5. Never hold hot foods in the Bain Marie or other food warming devices from one feeding period to the next. Bain Marie temperatures are usually too low to kill bacteria and are ideal for the rapid growth of bacteria over a period of several hours.
6. Wash your hands thoroughly with soap and water after using the lavatory. Keep hands out of your hair, eyes, and mouth. All cuts and/or sores you have should be reported for treatment.
7. Eliminate flies, roaches, rodents and other pests.
8. Never use galvanized containers for the storage of moist or acid foods.
9. Food workers must be healthy since colds and other diseases may be passed on to others.

WORKBOOK EXERCISES

Lesson 2

1. What are the six specific areas of accident prevention that are discussed in the Safety Section of this lesson?

A.

B.

C.

D.

E.

F.

TRUE OR FALSE

2. ______ Aside from knowing how to use the proper knife for a job, your next biggest concern is how to clean the knife.

3. ______ Knives should be kept in plain view when they have been set aside for a moment.

4. ______ The first thing to do when you see a piece of broken glass or china is to find out who broke it.

5. ______ When cleaning up broken glass, remove the largest pieces by hand.

6. ______ A cart or dolly should be used when moving heavy loads.

7. ______ When hot pads are not around, use your apron to lift a hot pot or pan.

8. ______ When you are lifting the lid of a hot kettle, remove it quickly.

9. ______ By warning others when something is hot, you help prevent accidental burns.

10. ______ Improper lighting is a safety hazard.

11. ______ Use a ladder that supports your weight when you are climbing.

12. ______ Do not use any equipment you have not been trained for.

13. ______ A wedding band is the only article of jewelry that may be worn by a food service worker on the job.

14. ______ By standing on a wet floor while plugging in a machine, one can become a victim of electrical shock.

15. ______ When cleaning a machine, the primary concern is to make sure the switch is in "OFF" position.

16. _____ Germs are killed when food is refrigerated or frozen.

17. _____ If you are sick, stay home rather than risking the chance of contaminating the food with which you work.

18. _____ The "danger zone" (when bacteria grow and reproduce best) is between 45° and 120° F.

19. _____ Once the bacteria have been killed, a food product is safe for eating.

20. _____ Shallow pans are recommended for storing cooked food since they allow food to cool faster than when in deep pans.

KEY TO WORKBOOK EXERCISES

Lesson 2

1. A. Preventing cuts from knives
   B. Preventing cuts from glass.
   C. Preventing strains.
   D. Preventing burns.
   E. Preventing falls.
   F. Preventing machine injuries.

2. False

3. True

4. False

5. False

6. True

7. False

8. False

9. True

10. True

11. True

12. True

13. False--No jewelry

14. True

15. False

16. False

17. True

18. False

19. False

20. True

HFS SPECIFICS: LESSON 2

The HFS, as you will see in the SPECIFICS for lessons 3 - 10, produces a wide variety of menu items that require the food service workers to operate many different types of equipment. If a worker does not practice safety measures while he is using this equipment, he leaves himself open to injury. In turn, if the worker is hurt, the establishment will have to employ a replacement for the injured worker and may have to pay for doctor and/or hospital bills (and perhaps unemployment benefits).

Not only is safety a necessity when a worker operates machinery--it must be employed at all times to prevent cuts, burns, falls, and strains. The establishment's design of the work stations (placement of equipment, walkways, and the like) can make the workplace less of a hazard to the employee. They may have non-slip surfaces on the floors, well-lighted stairways, adequately lighted work stations, and enough space between equipment to prevent crowding. But the safety of the working conditions still rests upon the workers. When the workers are careless in performing their jobs, accidents occur more readily.

The employees of the HFS have been trained to recognize potential safety hazards and to report them. They have learned accident prevevention measures and they practice these measures on the job. To encourage safety in the HFS, the management has this incentive plan: for every month on the job that a worker does not lose time on the job because of an accident, he receives 1/2 day free paid vacation. He can "win" up to a week's vacation with pay in a year. This system increases all worker's awareness of safety procedures and, in turn, increases their productivity during the hours they work.

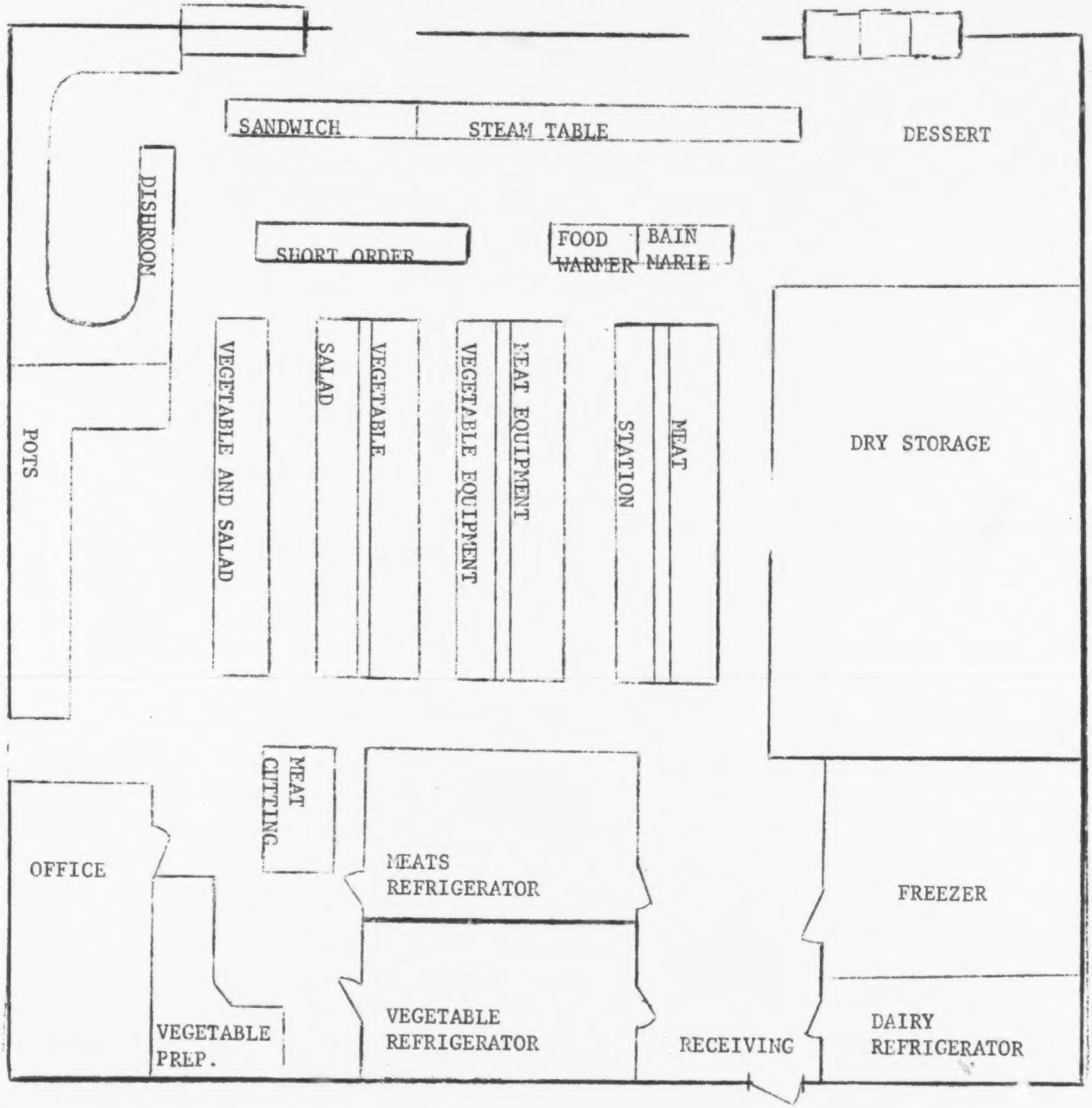
In addition to being safety conscious, HFS workers are constantly encouraged to practice sanitation. The management has posted signs in the dressing rooms and lavatories that remind the workers to wash their hands before returning to their stations. Cleanliness of the stations and the equipment is also stressed by the supervisors. All employees are trained how to clean the station areas and equipment and how to properly store and handle food products to prevent spoilage and food poisoning.

Safety and sanitation in the H̄FS are not looked upon as being childish precautions that are easily ignored. The workers are encouraged to view safety and sanitation as a way of life that must be practiced to have a successful food service operation. A safe, clean establishment is a reflection of employees that take pride in their jobs.

The dishroom in the H̄FS greatly resembles that of any food service facility. (See Figure 2.1) It is the responsiblilty of the morning dishwasher to set up the dish machine as described in SKILL #1. Once the machine is ready for use, the activity in the dishroom proceeds as follows: As the dishes are removed from the serving areas, they are placed on a conveyor belt that moves them into the dishroom. One worker removes excess food and garbage from the dishes, sprays them to remove soft particles of food, and places them in racks for washing. These racks move the soiled dishes into the three-compartment dish machine where they are washed, rinsed and sanitized. The same basic process is followed for silverware except that it is soaked first for a short period of time to soften the food particles. (All silverware, glasses, and dishes should be separated for washing.) Once the dishes have run through the machine, a second worker removes them from the racks and sorts them into piles. The same is done for glasses and silverware. The clean utensils are taken to the serving line or to the place where they are used for service.

At least once each day, usually at closing time, the dishwasher must clean the dish machine. He follows the procedure outlined in SKILL # 2 to perform the operation.

The potwashing area in the H̄FS is shown in Figure 2.2. It includes an area where soiled pots, pans, and other utensils are stacked before soaking, a soaking sink, a rinsing sink, and a sanitizing sink. After all utensils have been sanitized, they are placed in racks on the drainboard to dry before being stacked and returned to the stations. The procedure followed by the H̄FS potwasher is the same


SANDWICH
STEAM TABLE
DESSERT
DISHROOM
SHORT ORDER
FOOD WARMER
BAIN MARIE
VEGETABLE AND SALAD
SALAD
VEGETABLE
VEGETABLE EQUIPMENT
MEAT EQUIPMENT
STATION
MEAT
POTS
DRY STORAGE
MEAT CUTTING
OFFICE
MEATS REFRIGERATOR
FREEZER
VEGETABLE REFRIGERATOR
RECEIVING
DAIRY REFRIGERATOR
VEGETABLE PREP.

(NOT TO SCALE!)

FIGURE 1.2: HFS KITCHEN

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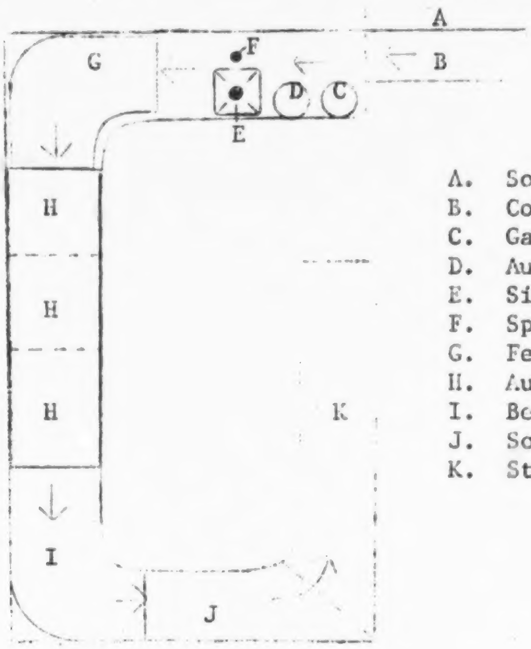
Figure 2.A : DISHWASHING AREA



KEY

A. Sorting counter
B. Conveyor belt
C. Garbage can
D. Automatic disposal
E. Sink
F. Spray
G. Feeder for dish racks
H. Automatic dish machine
I. Belt from machine
J. Sorting area (clean dishes)
K. Stacking area

NOTE: Arrows show flow of dishes and silver.

KEY

A. Stacking area
B. Soaking and washing sink
C. Rinsing sink
D. Sanitizing sink
E. Drainboard
F. Stacking area for clean utensils

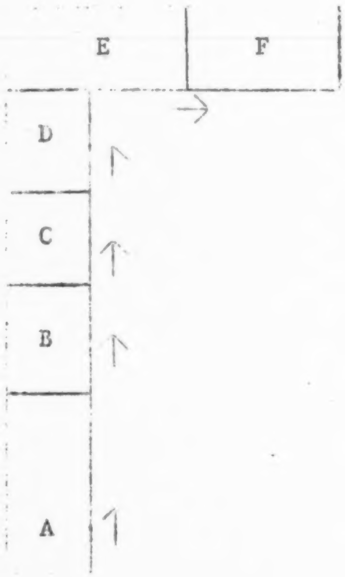


Figure 2.B : POTWASHING AREA

NOTE. Arrows show flow pattern of pots and pans.

as the one described on pages 17-19 of the book, Sanitation of Food Service Establishments which is enclosed in the lesson.

Note how the placement of both the dishwashing and potwashing areas in the HFS are convenient for the flow of soiled and clean utensils. Both are fairly close to the serving and preparation areas which limits the amount of walking that must be done by HFS employees. (See Figure 1.2.)

HFS EXERCISES

1. List as many conditions as you can that exist in your work place that are potential safety hazards and tell how you would correct them.

2. List ways in your establishment that employees could improve their habits to prevent accidents.

3. Do you feel that the food service employees in your establishment apply the principle of sanitation mentioned in this lesson? Give specific examples (below) of why you answered the question as you did.

SKILLS

Safety and Sanitation

1. A. Set up and operate a dishwashing machine.

   B. Clean and close up a dishwashing machine.

2. Clean a grill.

3. Clean a trunnion or steam kettle.

4. Clean a broiler grid.

5. Clean out a deep fat fryer.

RELATED SKILLS: Cleaning the equipment mentioned in these SKILLS: #'s 13, 49, 53.

ABOUT LESSON 3

The material in Lesson 3 concentrates upon reasons for, principles of, and problems encountered in vegetable cookery. After you complete this lesson, you should be able to recommend methods of cooking various types of vegetables and your reasons for choosing these methods. You should also know and apply the considerations for handling and storing fresh, frozen, canned, and dried vegetables.

STUDENT DIRECTIONS

1. Read pages 1-7.
2. Complete the Workbook Exercises on pages 8 and 9.
3. Check answers with the Workbook Key on page 10.
4. If you have answered questions incorrectly, re-read the material and re-answer any questions you missed before you proceed to #5.
5. Read the HFS SPECIFICS on pages 11 and 12.
6. Answer the HFS questions on pages 13 and 14.
7. See list of SKILLS appropriate for this lesson on page 15.
8. Follow the procedure for checking off SKILLS.
9. You have now completed Lesson 3. If you still feel you do not understand any part of this lesson, consult with a classmate, a fellow worker, the establishment supervisor, or the University instructor about your questions. You will be given a quiz on the material presented in Lesson 3 during the next class seminar.

VEGETABLES

As a group, vegetables are the primary source of vitamins and minerals necessary for growth and maintenance of health. This nutritive value must be preserved in the storage, cooking, and handling processes. If proper methods are not employed, the nutritive value is lost and the vegetables are worthless nutritionally.

Reasons for Cooking Vegetables

There are three reasons for cooking vegetables: to improve their digestability, acceptability, and palatability.

The digestability of vegetables is many times improved by cooking Some vegetables such as salad greens, can and should be eaten raw, but there are others that cannot be fully digested in an uncooked state.

Through proper preparation and cookery, the structure and texture of vegetables change, giving them a more desirable and attractive appearance. A variety of cooking methods may be employed to eliminate repetition and enhance acceptability.

The flavor of cooked vegetables differs from those eaten in their raw state. Cooking may serve to release desirable flavors or to modify undesirable ones, thus increasing palatability.

Storage of Vegetables

In order to conserve nutrients, vegetables must be properly stored before their use. Before they reach the restaurant or hospital, they should be properly packed and transported with such things as temperature, humidity, and gentle handling kept in mind.

Fresh vegetables, particularly, may spoil and lose nutritional value easily if they are not handled and stored properly. The specific temperatures at which to store particular vegetables vary, as does the relative humidity.

Generally, greens are stored slightly above 32° F. Other vegetables (with a few exceptions) are kept between 36-40° F.

Frozen vegetables should be stored at 0° F. or below. Once they are thawed or partially defrosted, they should be used as quickly as possible.

Unless opened, canned vegetables and dried vegetables need not be refrigerated. They should be stored in a cool, dry area, away from direct sunlight, however.

Classification of Vegetables

For our purposes, we will classify vegetables according to their color pigmentation rather than by whether they are seeds, roots, stalks, leaves, or fruit-type in origin.

Green vegetables are colored by a substance called chlorophyll. The natural green color is the most appealing color they can have and should, therefore, be preserved in cooking. This color is affected by acids, alkalies, and the presence of heat. When subjected to acid (such as vinegar), or high or prolonged heat, the vegetables turn olive green which is undesirable. The presence of baking soda (alkali) intensifies the green color (a desirable change as far as color), but destroys some of the vitamin content of the vegetable. Soda also makes the vegetable mushy and makes it look artificial because of the bright green color.

Red vegetables react exactly the opposite from green vegetables when acids or alkalies are added to the cooking water. The acid intensifies the color while the alkaline water creates a bluish or purple tinge which is a negative effect.

White vegetables turn more white in acidic water (positive effect). When overcooked, they tend to turn gray. Care should be taken only to cook them until tender in as short a time as is possible.

Yellow (and orange) vegetables are not subject to color change unless exposed to excessive heat. This would also produce an overcooked product, and would lighten the color of the vegetable. Overcooking causes negative changes in both color and nutritional value.

Remember: Overcooking any vegetable will destroy much of its nutritional value.

Preparation and Cooking of Fresh Vegetables:

A. Wash thoroughly.

1. A vegetable brush helps in cleaning such vegetables as potatoes, carrots, and celery.

2. Greens must be thoroughly washed in cool water to keep food value high and waste low. NEVER SOAK VEGETABLES IN WATER. This destroys minerals and some vitamins by leeching them out.

3. Broccoli, brussel sprouts, and cauliflower should be soaked in salt water to remove insects and worms.

B. Preparation for Cooking.

1. Limit paring and coring to a minimum. Excessive paring removes nutrients near the surface of the vegetable and raises the amount of waste.

2. When slicing or chopping vegetables for cooking, do not make the pieces very small. The greater the surface area of the vegetable that is exposed to heat and/or water, the larger the nutritional loss.

3. Prepare amounts fairly close to what will be needed for serving. This lowers the amount of leftovers which lose more nutrients each time they are reheated.

C. Cooking methods: The cooking method chosen for any particular vegetable should suit that vegetable so that when cooked it has the highest possible food value, fresh flavor, good color, and good texture.

1. Baking: This is done by direct oven heat using whole, pared, sliced, or diced vegetables. They are placed in a covered casserole with or without sauce added. Baking a vegetable in its skin is another way to bake vegetables with a minimum of nutrient loss.

2. Steaming: This method involves cooking in a steam media with or without added pressure. Since this method conserves most of the water soluable nutrients, it is a good way to retain food value. The vegetables also retain their shape.

3. Boiling: This is the most common method of cooking vegetables. Except for the cabbage family vegetables, vegetables should be cooked in a minimum amount of water--only enough to cover them. The vegetables in the cabbage family should be cooked uncovered in an excess amount of water in order to eliminate volatile acids. The following points should be practiced when cooking fresh or frozen vegetables:

   a. Drop vegetables into boiling salted water.
   b. Cook as quickly as possible.
   c. Use a minimum amount of cooking water.
   d. Do not vigorously boil vegetables.
   e. Do not let cooked vegetables stand in the cooking water.
   f. Utilize cooking water in making soups, sauces, and gravies.

4. Frying: Vegetables may be pan fried, sauteed, or deep fat fried. For deep fat frying, some vegetables are placed in a batter before frying (as is eggplant) or just placed in the fat (French fries).

Frozen Vegetables

With the exception of washing, the majority of the rules that apply to fresh vegetables also apply to the frozen variety. Most frozen vegetables should be cooked in the frozen state.

Because they are partially cooked before freezing, a process called "blanching," frozen vegetables require less cooking time than do fresh vegetables. For specifics, follow the directions on the package.

Canned Vegetables

Canned vegetables require only a short reheating time since they were cooked in the canning process. They need not be boiled--this overcooks the vegetable. The vegetables should be cooked in their own juices and seasoned carefully to taste before serving. These juices may then be used in soups, sauces, or gravies.

Dehydrated Vegetables

The availability of fresh vegetables year round has greatly cut down on the use of dried vegetables.

The reconstitution process merely involves replacing moisture that was lost in ripening and drying of the vegetables. This is done by soaking the dried product in water. Care should be taken to measure the water accurately--too much results in a loss of nutrients while too little will not permit the product to absorb all the water it lost, thus causing a product with poor volume and texture. The vegetables should then be simmered, not boiled, since boiling toughens them.

Methods of Serving Vegetables

There are a variety of ways to serve vegetables that add variety as well as food value. The most popular ones are as follows:

1. With fats: This is the simplest method and is done by adding butter or fat from bacon to the cooked **product**. (Example: green beans and bacon.)
2. With sauce: Sauces may be combined directly with the vegetables (as a white sauce) or added to the vegetables in serving (Hollandaise sauce). Example: asparagus with Hollandaise sauce.)
3. Scalloped: Raw layers of sliced vegetables are placed in a buttered baking dish, sprinkled with seasoning, butter, and flour. Milk is then added (white sauce is used with cooked vegetables). (Example: scalloped potatoes)
4. Au Gratin: White sauce is added to the cooked vegetables in a baking dish covered with buttered bread crumbs. It is browned in a hot oven for 10-12 minutes. Grated cheese is added. (It can also be blended in the white sauce.) (Example: Broccoli or cauliflower au gratin.)
5. Croquettes: Chopped cooked vegetables are combined with a very thick white sauce. They can be shaped, dipped in eggs, then into crumbs, and fried in deep fat. If the croquettes are chilled for about an hour before they are fried, they are more easily handled.

6. Custards: Chopped or diced vegetables are added to a combination of egg and milk to form a custard. It is seasoned and placed in a greased baking dish. The dish is then placed in a pan of hot water and baked in a slow oven until the custard sets. (Example: mixed vegetables)
7. Fritters: Pieces of vegetables are combined with a batter, spooned out, and dropped into deep fat.
8. Glazed: Vegetables are sliced and placed in a baking pan. Syrup is poured on top. They are baked in a moderate oven and basted during cooking. (Example: glazed carrots).
9. Souffles: Vegetables are mashed or finely chopped and thickened to a consistency of a thick white sauce. Egg yolks are combined with the thickened puree. Beaten egg whites are folded in. It is baked in a slow oven until it sets. (Example: spinach souffle.)
10. Stuffed: A variety of vegetables are stuffed with various mixtures (for example, stuffed peppers.)

Use of Leftover Vegetables

Leftovers may be a result of many different things including preparing too much, preparing improperly, and poor choice of an item on the menu. When reusing leftovers, the following should be kept in mind: (1) they must be "fit to eat;" (2) the leftovers should not be used in their original form if they can be altered; (3) store leftovers properly; (4) they should not be overcooked--only warming is required; (5) they should be properly seasoned, keeping in mind that they had previously been seasoned and (6) the leftover vegetables can be used in soups, gravies, sauces, and vegetable casseroles.

Special Reminders in Vegetable Cookery

To retain food value, flavors, color, and texture:

1. Cook as quickly as possible.
2. Use as little water as possible (except cabbage family).
3. The vegetable should be added to boiling, salted water.
4. If the vegetables are to be steamed, spread the vegetables in pans in shallow layers.
5. NEVER add soda to cooking water.
6. Cook the vegetables in their skins whenever possible.
7. Bake or steam when practical.
8. Prepare only what is needed immediately--holding for long periods of time destroys food value, color, texture, and taste.
9. Use cooking water in soups, sauces, or gravies.
10. Have the fresh vegetables crisp before cooking.
11. Cook only until tender--better to undercook than overcook.
12. Handle fresh vegetables gently and as little as possible.
13. Never serve any item that is not "fit for eating".

WORKBOOK EXERCISES

Lesson 3

1. Considering what you have learned in this lesson, determine if the following is a good practice and explain your reasoning: To store lettuce, remove the leaves from the heads and pack in chipped ice.

2. Fill in the following chart according to color change when numbers one through four are subjected to the conditions described above each column.

Pigment	Add Acid	Add Alkali	Excessive Heat or Overcook
1. Green			
2. Red			
3. Yellow			
4. White			

3. List three vegetables that are baked.

4. List five vegetables that can be steamed.

5. Which requires more cooking time--fresh green beans or frozen green beans? Why?

6. What effect would thawing at room temperature have on frozen vegetables?

7. How do you cook canned corn?

8. What general ill effects does the addition of soda have upon vegetables?

9. What is the standard portion size of vegetables where you work?

10. Classify the following vegetables in color groups
(g = green, r = red, y = yellow, w = white)

String beans _____
Cauliflower _____
Beets _____
Onions _____
Potaotes _____
Sweet Potatoes _____
Tomatoes _____
Carrots _____
Celery _____

KEY TO WORKBOOK EXERCISES

Lesson 3

1. It is a poor practice mainly because packing in ice bruises the leaves and has the same effect as soaking (removes vitamins and minerals).

2.

Pigment	Add Acid	Add Alkali	Excessive Heat or Overcook
1. Green	Turns Olive Green	Turns Bright Red	Mushy and Olive Green Color
2. Red	Turns Bright Red	Turns bluish	Color Fades
3. Yellow	No visible color change	No visible color change	Turn lighter
4. White	Whitens	No effect	Turn gray

3. Possible answers include potatoes, vegetables in casseroles, onions, eggplant, and squash.

4. Almost any vegetable that is boiled can be steamed.

5. Fresh; frozen foods are partially cooked (blanched) before freezing, thus reducing total cooking time.

6. It allows bacterial growth that would be hindered at refrigeration temperatures.

7. Merely warm it in its own liquid.

8. It makes the texture mushy and destroys nutrients.

9. Depends upon work place.

10. g

w

r

w

w

y

r

y

g

H̄FS SPECIFICS

THE VEGETABLE STATION

The H̄FS menu offers a variety of plain and fancy vegetable items for every lunch and dinner meal. On most days the menu also includes a special entree, the "vegetable platter", for those weight-watching customers. The style of the menu requires the use of many fresh vegetables even when they are not in season. Fresh vegetables increase the amount of necessary handling, storage, pre-preparation, and preparation of vegetable items for the vegetable cook. Because of this extra work load, the H̄FS employs two full time workers on the vegetable station.

The activities of the vegetable station workers include cleaning, paring, slicing, and cooking vegetables. They may also be required to store vegetables after pre-preparation takes place. On occasion, the vegetable cooks may prepare vegetables that will be used in food products prepared by other station workers.

As the work day begins, one of the vegetable cooks obtains the day's menu, the worksheet, and the recipe cards needed to prepare luncheon and dinner items. He (or she) sets up the work station, determines a time schedule for preparation, and proceeds to follow the recipes to prepare the food products. Before beginning to prepare any vegetable item, one of the vegetable cooks checks the vegetable refrigerator to see what leftovers can be used. If this is not done, there is a possibility that leftovers will go to waste.

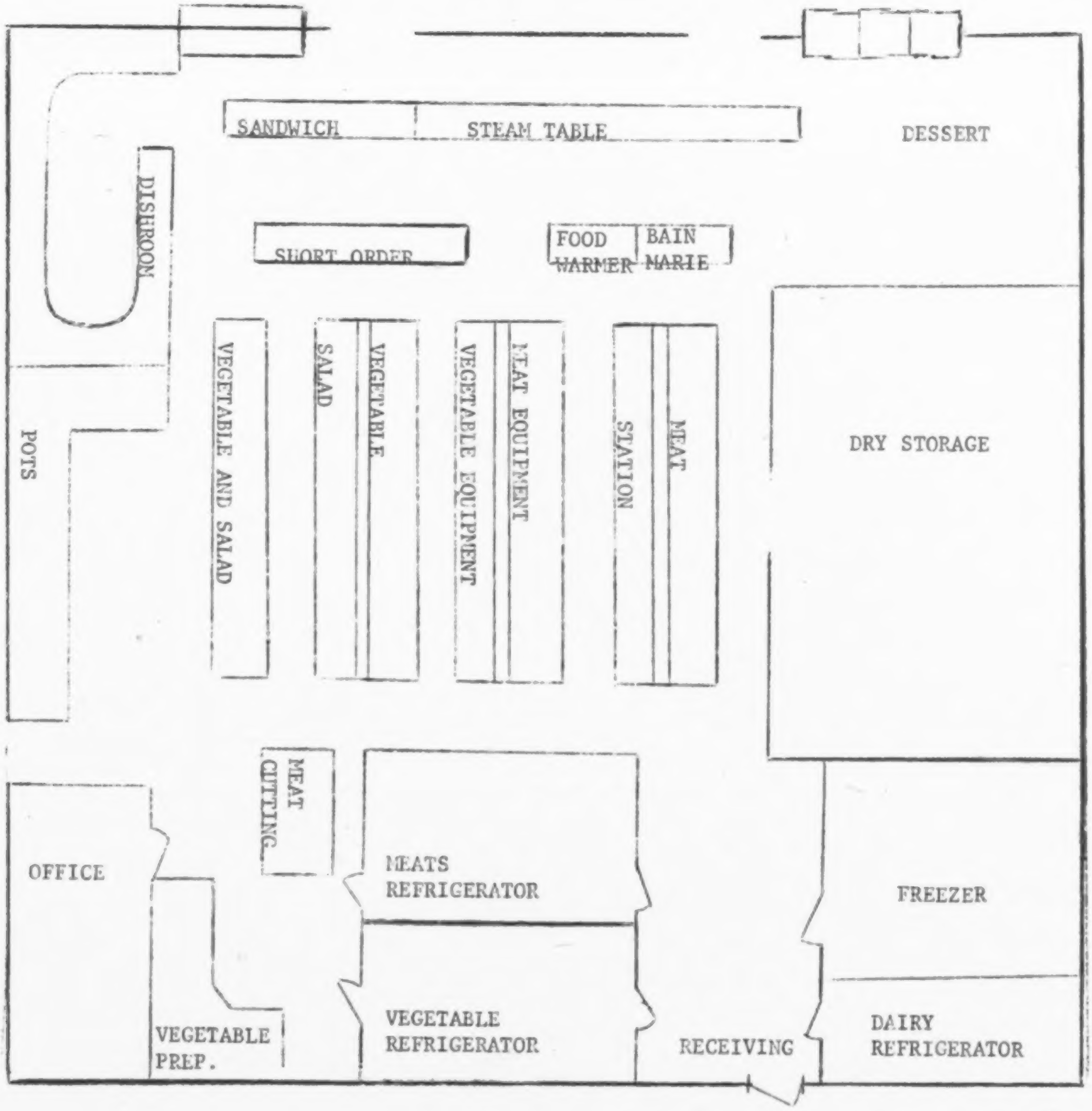
Depending upon the time schedule and the amounts and types of vegetables needed for a meal, the H̄FS vegetable cooks may only clean and cut up the vegetables, place them in pans, in which they will eventually be cooked, and return them to the refrigerator. In the case of vegetables (such as potatoes) that discolor when exposed to air, the cooks add an anti-oxidation solution which retards this. They must be aware of how to properly store not only partially prepared items, but leftovers as well.

The HFS vegetable cooks use the following cooking methods in preparing vegetable items: steaming, boiling, baking, sauteeing, braising, and frying (although most of the deep fat frying is done in the pantry area). Usually the method of preparation is determined by the recipe (or menu) which relieves the cooks of making one deicison. However, they must concern themselves with producing a quality product by maintaining food value, color, texture, and taste. Therefore, they must know and employ methods of proper handling, storage, cooking, and holding techniques.

Steaming vegetables may be performed either in the stack steamer or in the speed cooker, depending upon the necessary amounts. The trunnions (steam kettles) may be used for boiling, sauteeing and braising vegetables. Baking operations are performed in the oven. The deep fat fryer is used only when the fryer in the short order unit is overloaded with other food products that must be deep fat fried. (See the vegetable station layout in Figure 3.) The arrangement of equipment in the HFS vegetable station allows good product flow from the vegetable refrigerator to the vegetable preparation area or to the station and finally to the steam table. Because of this logical set up, the station workers save time, steps, and energy in performing their jobs.

The HFS emphasizes the importance of producing a quality product. Vegetables, because of their composition, lose quality and appeal if they are cooked too long before the serving period. One of the most difficult things to judge with vegetable preparation is supplying enough fresh vegetables to meet the demand. In order to maintain a quality product and insure food value, the HFS cooks prepare only small quantities of vegetables at any one time. They must be able to time the cooking of the vegetables that cannot be held for long periods of time so that there is enough to meet the demand but not so much that the quality is damaged. This is an activity that can only be achieved with experience.

REFERENCE: If you encounter practices in your work place that are not like those in Lesson 3 or the HFS SPECIFICS, do not express this to the employees in that establishment! Concentrate on the reasons for such differences and bring them out in your seminar discussion.


SANDWICH
STEAM TABLE
DESSERT
DISHROOM
SHORT ORDER
FOOD WARMER
BAIN MARIE
VEGETABLE AND SALAD
SALAD
VEGETABLE
VEGETABLE EQUIPMENT
MEAT EQUIPMENT
STATION
MEAT
POTS
DRY STORAGE
MEAT CUTTING
OFFICE
MEATS REFRIGERATOR
FREEZER
VEGETABLE REFRIGERATOR
VEGETABLE PREP.
RECEIVING
DAIRY REFRIGERATOR

(NOT TO SCALE!)

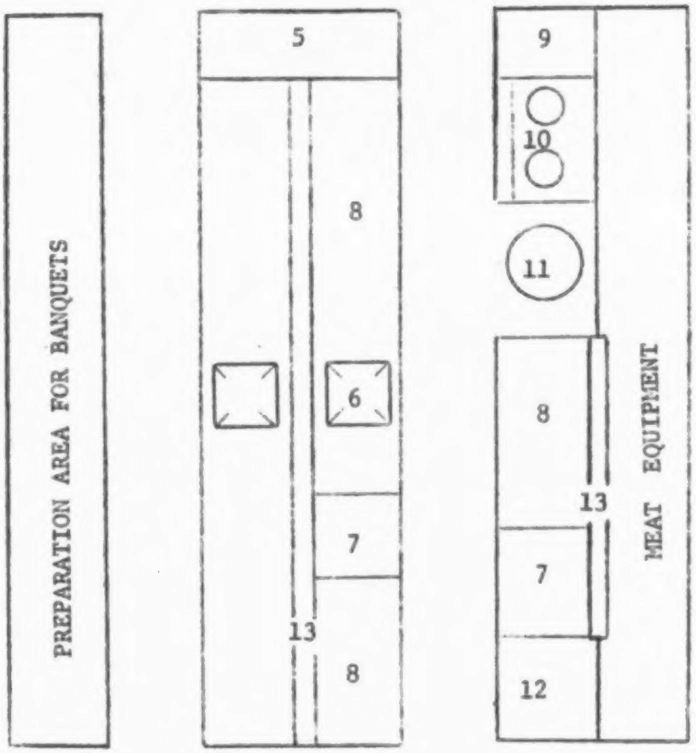
FIGURE 1.2: $\overline{\text{H}}$FS KITCHEN

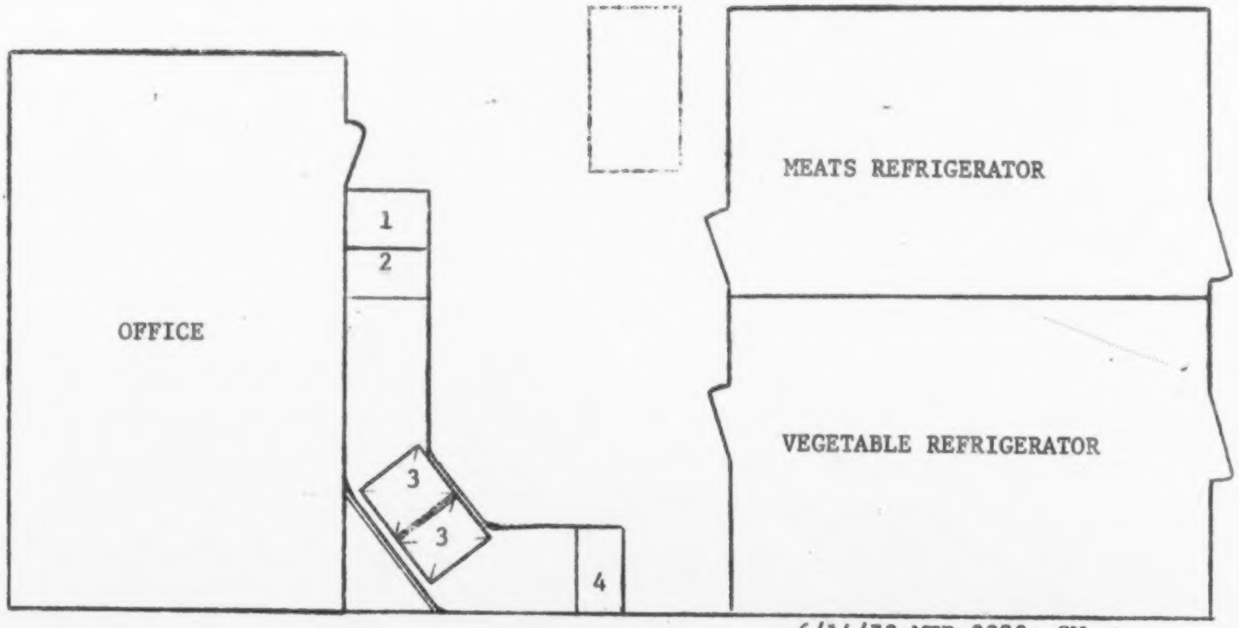
5/30/72 MER 2254: SW

Figure 3 : VEGETABLE PREP. AND VEGETABLE STATION

KEY

1. Automatic potato peeler
2. Food chopper-grinder
3. Sinks
4. Ice machine
5. Veg.-Salad refrigerator
6. Sink
7. Built-in cutting board (2)
8. Veg. work tables (3)
9. Stack steamer
10. Two 20 quart trunnions on table
11. 30 gallon trunnion
12. Floor mixer
13. Raised shelf for recipes


PREPARATION AREA FOR BANQUETS
5
8
6
7
13
8
9
10
11
8
13
7
12
MEAT EQUIPMENT


MEATS REFRIGERATOR
1
2
OFFICE
VEGETABLE REFRIGERATOR
3
3
4

6/14/72 MER 2280: SW

HFS EXERCISES

Vegetable Station

1. Make a rough drawing of the "vegetable station" in your establishment. Show placement of equipment as is done in Figure 2.

2. A. List all frozen vegetables used in your establishment.

   B. List all canned vegetables used in your establishment.

   C. List any other vegetables your work place uses and state if they are fresh or dehydrated.

D. What are the reasons that your establishment purchases more vegetables in one form than another (i.e., canned rather than frozen)?

3. Name three dishes in your work place that are made using leftover vegetables.

SKILLS

Vegetable Preparation

6. Set up deep fat fryer
7. Run deep fat fryer
8. Strain fat in deep fat fryer
9. Peel potatoes
10. Use a French knife to:
    1. dice
    2. slice
11. Use a steamer to cook vegetables
12. Reconstitute leftover vegetables
13. Operate automatic potato peeler

RELATED SKILLS: #'s 3, 5, 15, 17, 18, 23, 49, 53, 58.

ABOUT LESSON 4

Lesson 4 deals with the basic principles of making good salads. The material includes the purposes of different types of salads, how to handle, clean, and store salad ingredients, and the preparation and use of basic salad dressings. Upon completing this lesson, you should be able to understand and apply the basics of salad preparation.

STUDENT DIRECTIONS

1. Read pages 1-6.
2. Complete the Workbook Exercises on pages 7 and 8.
3. Check your answers with the Workbook Key on page 9.
4. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #5.
5. Read the HFS Specifics on pages 10 and 11.
6. Answer the HFS questions on pages 12 and 13.
7. On page 14 you will find a list of SKILLS appropriate for this lesson. Follow the procedure for checking off SKILLS.
8. You have now completed Lesson 4. If you still feel you do not understand any part of this lesson, consult with a classmate, a fellow worker, the establishment supervisor, or the University instructor about your questions. You will be given a quiz on the material presented in Lesson 4 during the next class seminar.

SALADS

A salad may be defined (generally) as any cold dish of vegetables, dairy products, meat, fish, poultry, or fruit usually served with some form of dressing. These ingredients may be served alone or in combination. There are a few exceptions to this definition such as various hot salads.

Salads, depending upon their ingredients, are capable of providing foods from any of the Basic Four Food Groups. They may supply many essential vitamins and minerals. The role of salads should not be looked upon as minor. They provide an ideal way to complement and highlight a meal as well as a means to aid nutrition.

Principles of Good Salads

1. Quality of the ingredients of salads includes freshness, proper cleaning of greens and all salad items, and proper storage before and after preparation. Excess handling should be avoided since this bruises food items and increases waste. It also decreases nutritional value.
2. Foods should be properly drained. Greens should be dry.
3. All salads should be neat and attractive on the plate.
4. Salads should be simple in composition.
5. The taste and texture should be appetizing.
6. The salad should be properly chilled.
7. Foods combined in a salad should go well together.

Salad Categories

A salad may serve one of four general purposes in a meal. It may be an appetizer, an accompaniment, a main dish, or a dessert.

The appetizer salad should stimulate the appetite. It should be light and served in a small portion. Examples are various fruit cups, shrimp or crabmeat cocktail, chopped chicken livers, or pickled herring.

A salad served as an accompaniment offers a contrast to the rest of the meal. The size of the portion is moderate. It may be served with the main course or as a separate course. Examples are tossed salads, peach and cottage cheese, and pickled beet salads.

The main dish salad is exactly what it describes--a salad which is the whole meal. This salad combines a variety of products such as meat, fish, poultry, cheese, fruit, vegetables, dairy products, macaroni, or gelatin products. It should contain as many of the Basic Four Food Groups as possible without losing simplicity, flavor, and eye appeal. Examples are Chef's Salad tomato stuffed with tuna salad, and fruit salad plate with cottage cheese.

Dessert salads are frequently on the sweet side. They combine fruits, nuts, dairy products, and gelatins. They may be chilled, molded, or frozen.

Parts of a Salad

There are four basic parts that make up the majority of salads. They are the base, the body, the dressing, and the garnish.

The base consists of some type of salad green that is put on the plate under the salad body. It keeps the salad and plate from looking bare, adds to eye appeal, and provides contrast to the salad body.

Salad bodies are the combination of ingredients which give the salad its name. The body may be served in any one of a limitless number of ways.

Salad dressings may be served on the salad or they may be served separately. They add flavor, palatability, and nutritional value to the salad.

Garnishes are the finishing touch to a salad. They add to eye appeal and color of the salad. They should be simple enough not to take away from the salad, yet attractive enough to attract attention. The texture and flavor of the garnish should be related to the salad.

Salad Ingredients

There is an endless variety of salad ingredients. Probably the most widely used ingredients are salad greens. These include many types of lettuce, escarole, romaine, chicory, endive, Chinese cabbage, and watercress. Others include raw spinach, celery, parsley, onions, radishes, cucumbers tomatoes, and many too numerous to mention. These ingredients are served uncooked.

Since greens are used so extensively in salads, their preparation and storage is of much importance. Greens should be washed several times in large quantities of cold water. This removes dirt or sand that is on or between the leaves. When possible, whole heads are washed to limit handling of the inner leaves. It may be necessary to remove the core either with a knife or by twisting. Water is run through the leaves or the head is soaked for a short period of time in the water. Greens should be picked out of the water instead of dumping the water from the greens. This is done because the dirt particles settle to the bottom of the container. The greens should be drained as much as possible, covered with a damp cloth and refrigerated until they are needed for preparation. Greens should be crisp but not wet when served. Salad dressings will not coat wet greens.

When time allows, green salads should be prepared as close to serving time as possible. Salads may be mass produced like sandwiches. Dressings and tomatoes should be added directly prior to service. If they are put on too soon, the result is a soggy salad. When making chilled salads, plates should be refrigerated in advance. Salads ready for service should also be refrigerated.

Fruits in Salads

An endless variety of fruits may be used in salads. Like greens and other vegetables, they are very fragile and should be handled as little as possible. Ripened fruits should be refrigerated. This includes bananas since refrigeration does not harm the fruit but merely discolors the peel. Unripe fruits may be stored at room temperatures until they ripen. They should then be refrigerated.

Canned fruits of high quality may be used in place of fresh fruits in salads. They should be stored in a cool, dry place before opening and must be refrigerated after the can has been opened.

Some fresh fruits such as apples and bananas turn brownish once they have been cut and exposed to air. This is due to the presence of a certain enzyme. This darkening may be prevented by soaking the cut pieces in a liquid of acid content such as orange juice so that the enzyme is destroyed. Special chemical anti-oxidants may also be used. Cooking such fruits and white vegetables also destroys the enzyme that causes browning.

When preparing fruits for use in salads they should be cut in pieces that are small enough for one bite. This prevents the necessity of additional cutting when the salad is being eaten. This same principle holds true for mostly all salads.

The best knives for slicing and preparing fruits are stainless steel ones. They do not stain or discolor the fruits.

Gelatins

The gelatin salad provides a unique way to combine interesting flavors and texture in a food item. Flavored gelatin can be served by itself or it can be combined with raw or cooked foods in many different ways.

To prepare flavored gelatin, add the amount of boiling water designated on the package. Stir until all gelatin granules have dissolved. Add the remaining cold liquid or, to chill the gelatin more quickly, add ice cubes in place of the normal amount of cold water. The gelatin should be refrigerated so that it sets up. Because of the time factor involved in producing a stable gelatin, it is recommended that gelatins be made the day before they are to be served. If they are stored much longer, a tougher, more rubbery product results.

Unflavored gelatin is prepared in much the same way as flavored gelatin except that the gelatin granules must be soaked in cold water first before boiling water is added. This moistens the larger unflavored particles and produces a more tender gelatin. In preparing both types of gelatins, care should be taken to mix the amount of gelatin accurately in the stated amount of liquid. Too much liquid produces a weak gelatin. Too little liquid produces a tough product.

When making a gelatin salad that suspends fruit in the gelatin, the fruit should be added (well-drained) when the gelatin has cooled enough to become syrupy. If the fruit is added too soon it may sink to the bottom or may stay at the top instead of being evenly distributed throughout the gelatin. If the gelatin is too thick when the fruit is added, it will not set up around the fruit.

When gelatin is used in molds, there is a special way to unmold it so as to keep the gelatin intact. The mold should be dipped up to the edge in warm water for just a few seconds. This loosens the gelatin in the mold. Leaving it in the water too long will melt too much of the gelatin and will produce a low quality product. The mold is then inverted on the plate and shaken or tapped until the gelatin loosens itself from the mold.

Salad Dressings

Salad dressings, like sauces, have a few basic types that can be altered by adding one or more ingredients. This changes the name and flavor of the dressing. The basic types of salad dressings are French, cooked, and mayonnaise.

The basic French dressing is a combination of oil, vinegar, and seasonings. It is what is referred to as a "temporary emulsion." This means that the oil and vinegar separate very quickly even if shaken vigorously or beaten. Most variations of the basic French dressing use other ingredients to keep the oil and vinegar from separating. When the oil and vinegar stay mixed, the full flavor of the dressing is achieved.

Emulisfying agents act like magnets between water-based substances and fats or oils. The agent coats the fat molecules and attracts water molecules. They tend to stay together (in an "emulsion") yet this is achieved by keeping fat and water separated.

Cooked salad dressings usually combine less oil than is used in French dressing with starch and egg yolk and additional liquids and/or whipping cream to flavor the dressing. Care must be taken not to overcook the dressing or to cook it too quickly at too high a heat. It is very important to follow the recipe when preparing this type of dressing.

Mayonnaise contains oil, vinegar, water, and usually egg yolks. It may also combine a variety of other ingredients. It is important that these ingredients are added in proper proportions so that the mayonnaise is smooth and creamy. This results in a permanent emulsion. The mayonnaise is prepared by whipping egg yolks, adding the dry ingredients, and adding about half the vinegar. The oil is then added in small amounts while beating continues. The remaining vinegar is added after all the oil has been used. The beating is continued for another five minutes at medium speed. If the mayonnaise is overbeaten, the emulsifying agent is stretched too far and the mayonnaise separates (a broken emulsion). This is a critical point that must be avoided.

Choice of an appropriate salad dressing for any particular salad is very important. The dressing should not cover up the flavor of the salad but should enhance it. A dressing should harmonize and blend with the salad ingredients.

The dressing should be placed on the salad as close to serving time as possible. If the dressing is put on too soon, the salad becomes soggy and loses its fresh, crisp flavor. This is true primarily for green salads. In those such as potato salad and macaroni salad that require that mayonnaise be added to combine the ingredients, the above rule does not hold true. The mayonnaise should be added about one hour in advance of serving in order to allow a blend of flavors.

WORKBOOK EXERCISES

Lesson 4

1. Name the four types of salads that may be served.

2. List the four parts of a salad.

3. Why are salad greens not soaked for long periods of time in the cleaning process?

4. Name the three basic types of salad dressing.

5. How is French dressing made more stable?

6. What thickening agents are usually used in a cooked dressing?

7. What type of a knife should be used when cutting fresh fruits such as apples or bananas?

8. A salad person discovers at 9:00 that there is a molded gelatin salad on the menu for that day's evening meal. If service begins at 4:00, do you think the gelatin will be ready? Why?

KEY TO WORKBOOK EXERCISES

Lesson 4

1. Appetizer, accompaniment, main course, and desserts.
2. Base, body, dressing, garnish
3. Soaking wilts them and also decreases nutritional value
4. French, cooked, mayonnaise
5. By adding various emulsifiers or chemicals that act as emulsifiers
6. Eggs (or egg yolks) or starch
7. Stainless steel
8. It should be if it is properly prepared and placed in small, individual molds. Chilling with ice instead of cold water would definitely ensure its being ready on time.

H̄FS SPECIFICS

THE SALAD STATION

The menu of the H̄FS requires the production of many and different salads for the afternoon and evening meals. Salads are served as appetizers, accompaniments, main courses, and desserts. Because in a typical day, the H̄FS may need up to twelve different salads, two fu-l time workers are employed on the salad station.

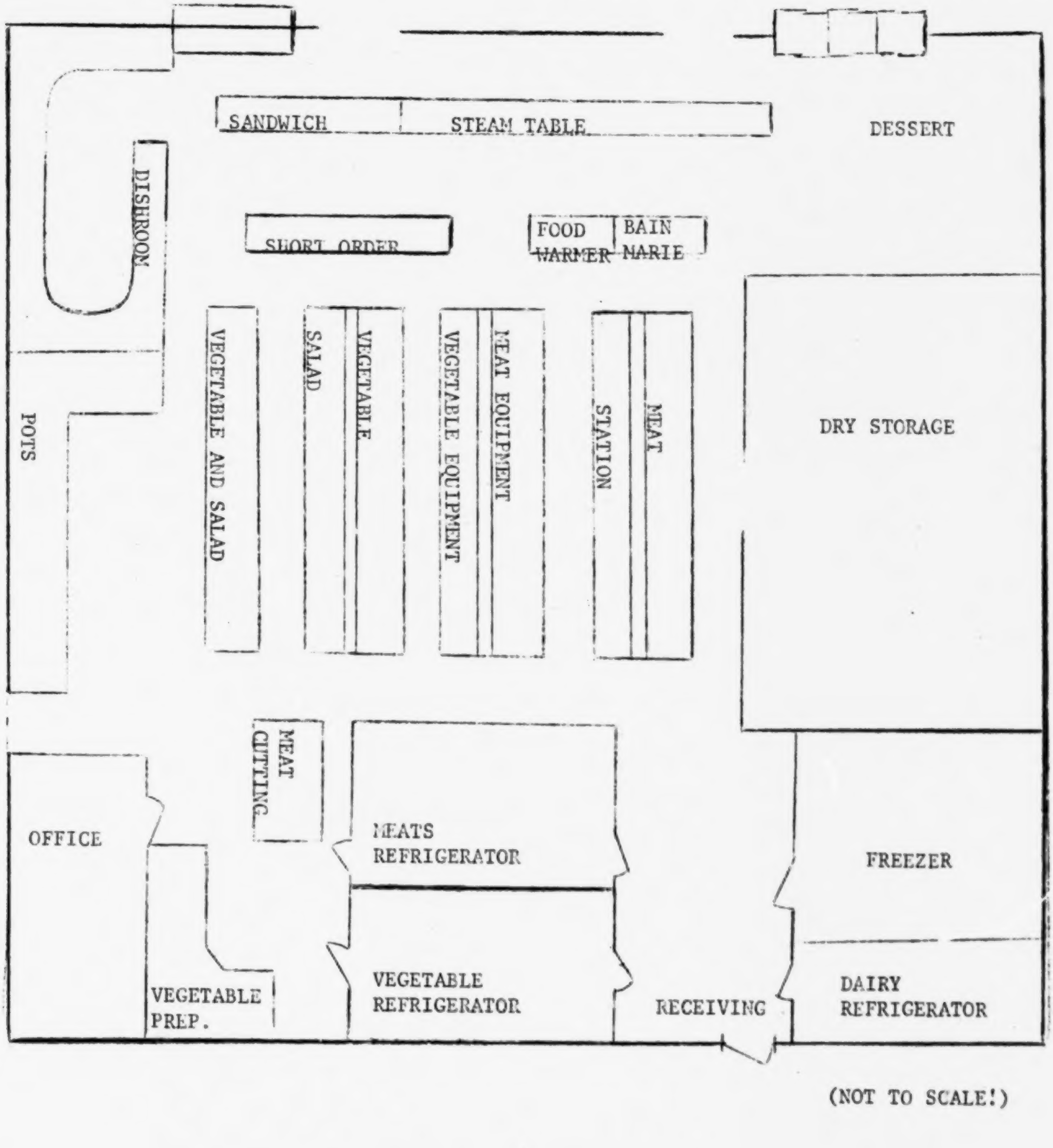
The jobs of the salad station employees include cleaning, handling, and storing salad ingredients, performing a variety of cutting activities, making garnishes, and preparing many ingredients other than salad greens for use in salads. They may prepare gelatin, macaroni, and a variety of meats and fruits for use in salads. The salad station workers check worksheets closely and may use high quality leftovers as salad ingredients. They also break down and store foods from leftover salads to limit waste in the H̄FS.

Most of the ingredients for salads are stored in the vegetable refrigerator. If the vegetable preparation area is not in use, the salad station workers may use it to clean greens and other salad ingredients before making the salads. The salad items are assembled on a movable cart and transferred to the salad station where they are prepared for serving. Prepared salads are portioned and placed on plates or in bowls that have been chilled and are placed in a refrigerator until they are needed for serving.

Because the salad station workers have much direct contact with salad ingredients in preparing and arranging the salads, proper sanitation habits are a necessity. The station area must be kept clean at all times. The workers wear plastic gloves when it is necessary. Proper safety habits are also used by the workers since their work requires frequent use of knives and machinery to slice and chop food items. Because the nature of the work in the salad station is similar to that of the vegetable station, much of the same equipment is used by the workers of both stations (see Figure 4). The placement of this equipment is such that it is convenient for workers from both areas to use it. It would be unwise to have duplicate pieces of equipment since neither station uses the machinery constantly. However, because of the more frequent use of the equipment, it is necessary that it be cleaned as soon as possible after each use.

Like the product flow in the vegetable station, the prepared salad items move from the refrigerator to either the pre-preparation area or the main preparation area at the salad station. Prepared salads are refrigerated and moved to the pass-through salad refrigerator beyond the steam table during the serving period. (One exception to the cold salads served in the H̄FS is the restaurant's hot potato salad. It requires combining diced potatoes and other ingredients and baking them in the oven. This salad is kept hot in the food warmer for serving.)

Attractive salads are one of the H̄FS's strong points. The salad station workers are very conscious of the characteristics of good salads (page 1 in Salad section) and follow the rules for preparing them. They are responsible for following recipes accurately and for seasoning salads to taste. Salads in the H̄FS remain a very popular menu selection because their quality is consistently high and the way they are presented is so appealing to the customer.



SANDWICH
STEAM TABLE
DESSERT
DISHROOM
SHORT ORDER
FOOD WARMER
BAIN MARIE
VEGETABLE AND SALAD
SALAD
VEGETABLE
VEGETABLE EQUIPMENT
MEAT EQUIPMENT
STATION
MEAT
DRY STORAGE
POTS
MEAT CUTTING
OFFICE
MEATS REFRIGERATOR
FREEZER
VEGETABLE REFRIGERATOR
VEGETABLE PREP.
RECEIVING
DAIRY REFRIGERATOR

(NOT TO SCALE!)

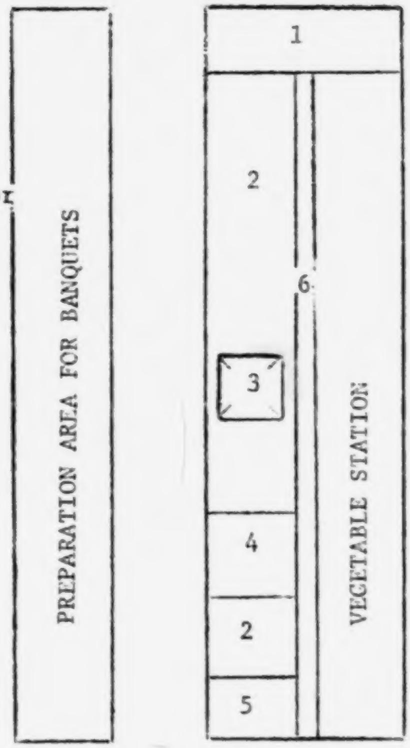
FIGURE 1.2: HFS KITCHEN

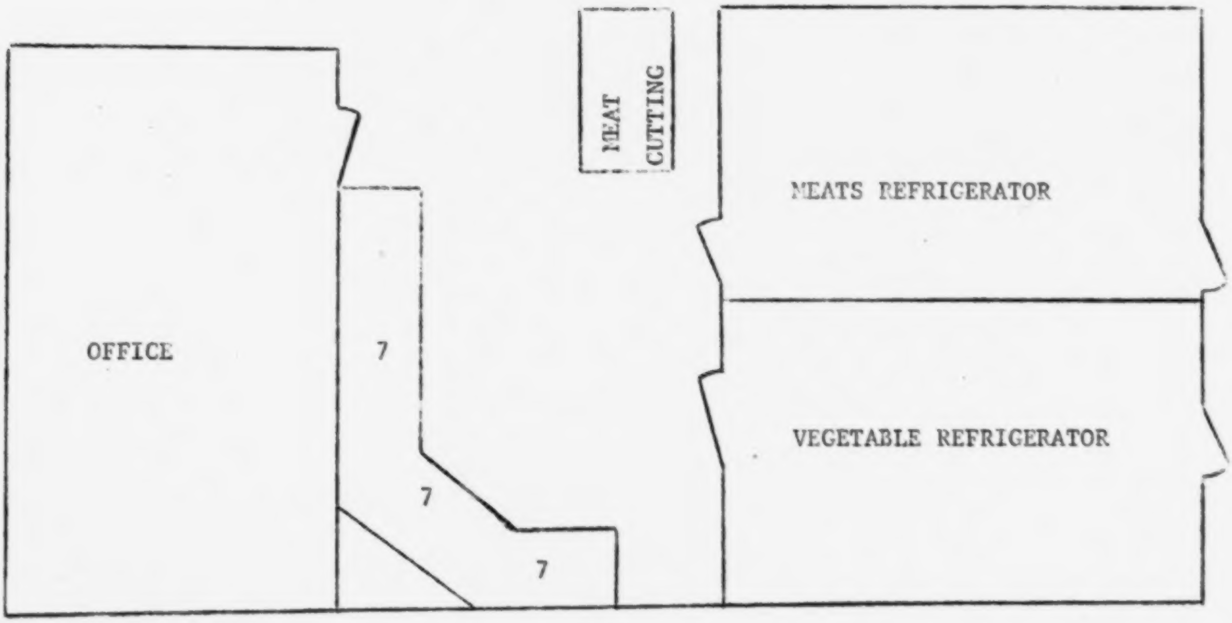
5/30/72 MER 2254: SW

Figure 4 : SALAD STATION

KEY

1. Veg. and Salad refrigerator
2. Salad work tables (2)
3. Sink
4. Built-in cutting board
5. Table model mixer
6. Raised shelf for recipes
7. Vegetable Prep. area is also used by the salad worker. See Figure 3 for specifics.


PREPARATION AREA FOR BANQUETS
1
2
6
3
VEGETABLE STATION
4
2
5


MEAT CUTTING
MEATS REFRIGERATOR
OFFICE
7
VEGETABLE REFRIGERATOR
7
7

HFS EXERCISES

1. List two different salads that are made in your work place for each of the four categories of salads.

Appetizer	Accompaniment	Main Dish	Dessert
1.	1.	1.	1.
2.	2.	2.	2.

2. Name at least five seasonings that are used in salad preparation in your work place.

3. List the greens that your establishment uses in salad preparation.

4. List all salad dressings your establishment uses and define them according to their base (French, cooked, or mayonnaise).

5. Draw a rough layout of your establishment's salad area (like Figure 4).

SKILLS

Salad Preparation

14. Core an apple using both methods
15. Remove core from head lettuce by:
    1. cutting
    2. twisting
16. Prepare fresh fruit salad from scratch
17. Clean salad greens
18. Store salad greens
19. Prepare a tossed green salad
20. Make salad bases
21. Prepare and unmold gelatin salads

RELATED SKILLS: #'s 9, (peeling fruits), 10, 29, 40, 53, 58, 73.

ABOUT LESSON 5

Lesson 5 provides a basic framework for cooking cereals, starches, and pasta products. The emphasis of this lesson is your being able to prepare and recognize high quality food items. After you complete this lesson, you should be able to identify certain menu items as being in one of these categories and, beside being able to prepare these items, you should know all possible methods of cooking them.

STUDENT DIRECTIONS

1. Read pages 1-6.
2. Complete the Workbook Exercises on pages 7 and 8.
3. Check your answers with the Workbook Key on page 9.
4. If you have answered questions incorrectly, re-read the appropriate material and re-answer the questions you missed before going on to #5.
5. Read the $\bar{\text{H}}$FS SPECIFICS on page 10.
6. Answer the $\bar{\text{H}}$FS questions on page 11.
7. On page 12 you will find a list of SKILLS that are related to this lesson. Follow the procedure for checking off SKILLS.
8. You have now completed Lesson 5. If you still feel you do not understand any part of this lesson, consult with a classmate, a fellow worker, the establishment supervisor, or the University instructor about your questions. You will be given a quiz on the material presented in Lesson 5 during the next class seminar.

CEREALS, STARCHES, AND PASTA

An understanding of the proper use of cereals and starches is extremely important because they are used in some form or another in practically every meal. We usually think of using starches in the preparation of thickening for desserts, soups, sauces, and gravies. But we fail to realize that the principles of starch cookery apply to cooking cereals, rice, potatoes, macaroni, spaghetti and other starch products.

Starch and Starch Cookery

Starch is a storage form of carbohydrates deposited as granules in the cells of plants. Seeds and roots of plants and various tuber type vegetables (like potatoes)contain starch. The size of the starch granules differ according to their various sources, but all are microscopic.

Starch cookery is little understood and to determine when starch is completely cooked is a matter of guess work since precise methods, temperatures, and time periods for cooking are lacking. There appears to be no definite temperature of thickening but rather a gradual change occurring over a range of 35 to 50 degrees. It starts around 149° F. and continues until about 203° F. at which temperature maximum thickening will take place. A starch paste is sufficiently cooked when it becomes translucent and the starchy taste has disappeared. This may range from 3 minutes (gravy) to about 15 minutes (pasta products). The type of starch or thickening agent determines the length of cooking time.

The following factors determine the thickness of a starch mixture:

1. The kind of starch used.
2. The final temperature to which the starch is heated.
3. The time and temperature of standing after heating.
4. The quantity of sugar present in the mixture.
5. The presence of acid in the mixture.
6. The ratio of water to starch.
7. The presence of alcohol in the mixture.

The Kind of Starch

The same amount of different starches will not result in starch mixtures (or gels) of equal firmness. Cornstarch will produce a thicker gel than the same amount of potato starch. In general, cereal starches produce a firmer gel than root starches when both are used in the same proportions. There are also differences among the starches in each of these groups (cereal and root).

The Final Temperature to which the Starch is Heated

The greatest thickening of a starch mixture is not obtained until the mixture is heated well above the temperature of initial swelling of the granules. A starch paste of wheat starch will not form a firm gel unless it is heated to at least 195° F. A firmer gel is formed if the final temperature is 203° F. Therefore, since temperatures below this do not completely cook starch, water in the lower part of the double boiler should boil so that maximum temperature can be reached in the top compartment. (A steam trunnion kettle may be used in place of a double boiler.)

Time and Temperature of Standing after Heating

As a cooked starch paste cools, it becomes thicker in consistency. Thus, a sauce that pours well when hot may form a gel upon cooling; one that is cooked, cooled in the refrigerator, and is thick before it is reheated may become too thin to use after reheating. (This depends upon the type of starch used.)

Quantity of Sugar Present in the Mixture

The addition of sugar to a starch paste will tenderize the starch gel. As the quantity of sugar increases, the translucency as well as the tenderness of the gel increases until, beyond a certain point, a gel will no longer form. Therefore, in any recipes which requires a large amount of sugar (for example, lemon pie or cherry pie filling), it is best to add the sugar after some thickening has taken place. However, a small portion of the sugar may be combined and cooked with the starch without bad effects.

The Presence of Acids in the Mixture

Acids such as lemon juice, when added to a starch paste before cooking reduce the thickening power of the starch. To prevent any ill effect, fruit juices should be added after some thickening has taken place. This also produces a more natural fruit flavor since the heat does not effect the juice as it would if cooked.

The Ratio of Water to Starch

It is important in starch cookery to add the correct amount of starch to water to obtain the desired thickness. Too much water results in a weaker gel. Too little water produces a situation where there is not adequate water to be absorbed by the starch granules. This will result in a lumpy, glue-like product.

The Presence of Alcohol

Some recipes may call for the addition of a flavoring which contains alcohol to the starch mixture. Since alcohol will evaporate at high temperatures like those of starch cookery, such flavorings should be added only after the mixture has been cooked. This will increase the flavor of the gel to the greatest degree.

Combining Procedures

When boiling water is added to dry starch, the mixture formed is lumpy. When these lumps are broken open, dry starch may be found in the interior. This is caused since the granules reached first by the water swell too quickly and the water cannot penetrate the swollen granules. In order to obtain a smooth paste, when starches are combined with hot liquid, the granules of starch must be separated in some way to be given an equal chance to absorb water. The separation of these granules may be accomplished by mixing with an equal amount of cold water or by blending with other dry ingredients such as sugar. (The sugar draws water between the granules of starch and prevents lumping.) In any method of combining starches and hot liquid, the possibility of lumping will be lessened greatly if a smooth paste is first made of the dry ingredients and cold liquid. It is also very important that the paste and hot liquid mixture be stirred constantly to get an even distribution of granules. Once the mixture has thickened, the cooking utensil is covered and the mixture is stirred about every 15 minutes or until the raw starch taste is eliminated.

Cereals and Cereal Cookery

Cereals are seeds of certain grasses consisting mostly of starch. They are used not only as breakfast items but in making breads, cookies, cakes, toppings for casseroles, and in numerous other ways.

Cereals for breakfast are avilable today in ready-to-serve form and in ready-to-cook form. These differ mainly in the amount of processing that has been done to the grain. Chief sources of grain for breakfast cereals are wheat, corn, rye, oats, buckwheat and others.

Ready-to-eat cerals may have substances such as sugar, dried fruit, molasses, or honey added to them. They may be in the form of flakes or they may be "puffed."

Ready-to-cook cereals fall into three groups:

1. Small granules, such as farina or corn meal.
2. Flaked grains, such as rolled oats and flaked wheat.
3. Whole grains, such as rice and hominy.

Cereals, like starches, should be combined with liquid in such a way so as to avoid lumps from forming. For fine granular cereals, they should be combined like starch. That is, enough cold liquid should be added to the dry cereal to form a smooth paste. The remainder of the liquid should be brought to a boil and the paste added with careful stirring. This mixture should be brought to a boil over a direct fire, cooked for about two minutes, and placed over boiling water (a double boiler) to continue cooking. The cooking utensil should be covered to prevent the formation of a skin on the top of the cereal.

Approximately six units of water to one unit of cereal is required. If the consistency is still too thin after cooking has been completed, further cooking may be necessary for the purpose of evaporating excess water.

To reheat cold, cooked cereals, use a double boiler. Do not stir until the cereal is well heated. If it is too thick, add a little hot water.

Flaked grain cereals such as rolled oats or flaked wheat should be sprinkled gently into boiling water that has been salted. Slight stirring may be required only if the water ceases to boil. The cereal may be cooked at a gentle boil, over direct heat, for about two minutes and then allowed to continue cooking in a double boiler (or, the whole cooking process may be done in a steam kettle). Unnecessary stirring or excessive boiling will produce a sticky, gummy mass. The amount of water varies according to the product being cooked because some cereal grains may require more liquid than others. If cereals are cooked for the entire time at boiling temperature, evaporation of the liquid is much greater than if the cereals are cooked in a covered double boiler or steam kettle.

Whole grain cereals such as rice or hominy may be gradually added to boiling water and gently boiled until tender. The thing to remember when cooking whole grain products is to cook the grains tender and swell them to capacity without breaking them and overcooking them. There are three main varieties of rice: long grain, medium grain, and short grain. The amount of processing given to each determines how much cooking will be necessary to yield a finished product. Because of the differences in cooking times, different types of rice should not be mixed if a quality product is desired.

Each of the three main varieties of rice may be milled in a number of ways to produce brown rice, unpolished rice, polished rice, converted rice, or coated rice. These processes will not be further explained here.

There are several methods for cooking rice; however, it is very important that we select one that will give us maximum retention of flavor, nutrients, and eye appeal. In order to accomplish this, cooking methods should be used that regulate the amount and evaporation of water so that none remains to be discarded when the rice is ready to serve. Usually, with converted rice, the ratio is 2 to 2-1/2 volumes of water to one volume of rice. The rice, butter, and salt are added to the proper amount of cold water, stirred occasionally, and water brought to a vigorous boil. The heat is reduced and the rice is allowed to simmer in a tightly covered container for about 15 to 20 minutes or until the water is absorbed. The rice is transferred immediately to a serving pan and is covered until ready to be served. This is referred to as the "boiling-steaming method."

The pilaf method is also referred to as the "fried rice method." The rice is sauteed in a small amount of butter, margarine, or other fat until the grains are well coated. Onion may be finely chopped and sauteed with the rice. Hot or boiling stock or water in the correct proportions is then added. The utensil is covered and the rice is simmered for about 20 minutes or until tender and all the liquid is absorbed. Once the rice is cooked, it should be gently fluffed with a fork and served hot. Depending on the type of rice used, the volume of cooked rice usually increases 3-1/2 to 4 times its original uncooked volume.

Pastas

The term "pasta" refers to all macaroni products. This includes noodles, spaghetti, vermicelli, and other products made from durum wheat flour.

Pasta products are cooked in an excess of boiling water. A good guideline is 3 or 4 quarts of boiling, salted water per pound of spaghetti. This will yeild approximately 3 pounds of the cooked product. The time necessary for cooking will vary according to the shape and size of the pasta product. Noodles generally take less time than spaghetti which takes less time than macaroni. The products are cooked uncovered since a frothy head forms and boils over the range when the container is covered. Initial stirring may be necessary to prevent the product from sticking to the utensil. The food is gently boiled as the moving water prevents pieces from sticking together. Pastas are cooked until, when bitten, a piece still has a rather chewy texture but is tender enough to be cut easily. Overcooking produces a soft, mushy product. When cooking is completed, the water is drained off and the pasta is rinsed with cold water. This process stops further cooking and removes any excess starch covering from the pasta which would cause the cooked pieces to stick together. It is then ready for service.

Because of the rather bland taste of pasta products, they are usually served with a variety of sauces including tomato, cheese, and meat.

WORKBOOK EXERCISES

Lesson 5

1. What is the temperature range of thickening for starches?

2. What effect does an excess of sugar have on a starch gel?

3. What effect does lemon juice have on a starch gel?

4. How can a weak gel be prevented when adding lemon juice to a starch?

5. Why are eggs added after maximum thickening of a starch gel has taken place?

6. How should cream of wheat or corn meal be combined with the hot liquid?

7. How should rolled oats be cooked?

8. When cooking a starch paste using a double boiler, what temperature should the water be in the lower part of the container?

9. Why do you think rice should be simmered rather than boiled?

10. How do you determine doneness of a pasta product?

KEY TO WORKBOOK EXERCISES

Lesson 5

1. It begins rapidly around 149° F. and continues until maximum thickening takes place at about 203° F.
2. It tenderizes the gel to the point where a gel will not form.
3. It tends to weaken the gel.
4. Add it after the gel has been cooked.
5. The eggs cook at lower temperatures and would be overcooked if mixed with the starch before the gel was formed.
6. Blend first with cold water forming a paste and then adding to boiling, salted water using a double boiler.
7. They should be gently sprinkled over rapidly boiling, salted water and stirred only if boiling stops.
8. It should be vigorously boiling so that maximum temperature may be reached in the top compartment.
9. Rapid boiling tends to break the rice kernels and produce a mushy product.
10. When bitten, the product should still be "chewy" but tender enough to be cut easily.

H̄FS SPECIFICS

CEREALS, STARCHES, AND PASTA

There is not a specific person who prepares starch and pasta products or a specific station in the H̄FS where these activities take place. The reason for this is that starch and pasta products are used in many food items that represent different menu courses. For example, if an entree is a pasta product, it is prepared by the meat cook; if a salad recipe calls for macaroni, the salad station worker must prepare it; the vegetable cooks make rice and potatoes for vegetable courses; the dessert cook prepares custards and puddings; all of these workers must understand and apply the principles of starch and pasta cookery. Likewise, the short order cook or a pantry worker may be called upon to prepare hot cereal. This person must know how to prepare a quality product.

Since there is no true station where starches and pasta products are prepared, you should keep this in mind when the other stations are explained. Become aware of where, for example, the dessert cook would prepare a custard, and so on for each station.

In the H̄FS, pasta products and starches are usually prepared in a trunnion or steam kettle. On occasion, they may be prepared on the range top. Rice may be boiled or cooked in a steamer. How any particular product is prepared will depend largely upon the quantity needed and the available facilities.

NOTE: The preparation of starches and pasta products in the H̄FS will be covered in more detail in the H̄FS SPECIFICS for the meat station since most of these are used for entree items.

HFS EXERCISES

1. List all the pasta items that are used in your establishment as entrees for one week.

2. List as many items as you can that are prepared in your establishment that use cereal or starch.

3. After making the list in question #2, tell which person prepared which item (include pasta items). Also list the method of cooking used for preparing the item and the type of equipment used by the worker.

SKILLS

Cereals, Starches, and Pasta

23. Adjust the heat in a trunnion or steam kettle to SIMMER contents.

24. Prepare a hot cereal.

25. Prepare an item that uses starch as a thickener.

26. Prepare one pasta product.

RELATED SKILLS: #'s 3, 11, 27, 28, 30, 31.

ABOUT LESSON 6

The material presented in Lesson 6 deals with the preparation of various soups, sauces, and gravies. After you complete this lesson, you should be able to identify specific soups, sauces, and gravies according to their ingredients; you should also be able to successfully prepare any product in these three categories that is requested. Throughout the lesson you will find basic rules concerning the preparatio of some products-- memorize these rules since their proper use will yield a successful product.

STUDENT DIRECTIONS

1. Read the section on SOUPS (pages 1-3).
2. Complete the Workbook Exercises on page 4.
3. Check your answers with the Workbook Key on page 5.
4. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #5.
5. Read the section on Sauces and Gravies (pages 6-11).
6. Complete the Workbook Exercises on pages 12 and 13.
7. Check your answers with the Workbook Key on page 14.
8. Read the HFS SPECIFICS on page 15.
9. Answer the HFS Questions on page 16.
10. On page 17 you will find a list of SKILLS appropriate for this lesson. Follow the procedure for checking off SKILLS.
11. You have now completed Lesson 6. If you still feel you do not understand any part of this lesson, consult with a classmate, a fellow worker, the establishment supervisor, or the University instructor about your questions. You will be given a quiz on the material presented in Lesson 6 during the next class seminar.

SOUPS, SAUCES, GRAVIES

Soups are liquids which are named or classified according to what they contain or by their thickness. They may be served as an appetizer or as a main course, the latter being less frequent. The following is one possible way of classifying soups:

STOCKS or BROTHS, including boullions and consommés.

CREAM soups, thickened with a thin velouté, bechamel, or white sauce.

CHOWDERS, thick soups or stews (usually containing seafood, potatoes, and milk or cream).

BISQUES, heavy cream soups containing shellfish.

POTAGES, broths containing a large amount of ingredients (examples: gumbo, vegetable, chicken noodle).

PUREES, heavy soups containing small pieces of meat, fish, poultry, or vegetables (similar to a potage).

Appetizer soups should be light, stimulating to the appetite, and served in a small quantity (about six ounces). They need not be as nutritious as a main-dish soup since other foods will follow. The main-dish soup should be hearty and as satisfying as a stew or a casserole. It may be accompanied by a salad or sandwich to complete the meal.

Broths and Stocks

The process of making broth is a fairly simple one. Meat, meat bones, and vegetables are added to a liquid (usually water) and are simmered for a long period of time. The flavors from the ingredients make the liquid tasty. This liquid is known as broth.

A broth made from beef bones and meat is generally a deep brown color since the coloring comes from the marrow inside the beef bones. If beef broth is strained through cheesecloth (a process known as "clarifying"), it is called "boullion." Boullion is clarified beef broth.

Broths made from veal, chicken, or pork bones and meat are lighter in color than beef broth. When this broth is clarified, it is referred to as a consommé. A consomme is made from either veal, pork, or chicken.

Any soup that is made by clarifying a broth is called a "stock." Since both boullions and consommés are made from broths, they are also "stocks." A stock is therefore defined as a clarified broth. Stocks may vary in concentration, depending upon how much water has been evaporated from the product. All stocks are what are referred to as "basic" soups since they can be modified by adding various seasonings and/or vegetables to produce a variety of soups.

Bisques, Cream soups, and Purees

Bisques, (bĭsk) purees, and cream soups are all thick soups, but they also have various differences.

Purees are made with small pieces of meat, fish, poultry, or vegetables. Stock may be added for flavor.

The liquid in which the pureed product was cooked is usually used as the liquid in the soup, although water may be added. A puree may be a very heavy, nutritious soup, or a light soup used as an appetizer.

To make a bisque, cream or a bechamel (bā′ ché mel) sauce is added to a pureed product. The pureed food in a bisque (by definition) is shellfish or occasionally salmon. Tomato bisque is not a true bisque since it does not contain shellfish.

Bisques and purees, unlike many cream soups, are smooth in consistency. The flavoring foods in cream soups may be in small pieces or may be pureed. The liquid may either be light cream or milk and is thickened with cream, velouté, bechamel, or white sauce. The use of sauces in soups add flavor and develop body.

One must be careful in making cream of tomato soup since the acid in the tomatoes may curdle the milk. This can be avoided by adding a roux to both the tomato mixture and the milk before they are combined. In this way the acid is surrounded by gelatinized (thickened) starch as is the milk protein. When they are mixed together, the milk is protected from the acid and will not curdle.

Chowders and other Soups

A chowder is a heavy soup that usually contains diced onions, potatoes, bits of salt pork or bacon and seasoning in addition to the main ingredient. The main ingredient may be any one of a number of items from clams to lima beans.

Gumbos are stock soups made heavy by the addition of meats, fish, and/or vegetables. All gumbos have the vegetable okra in them. Such soups are frequently called potages. Many times, soups are so heavy with added ingredients that they may be more similar to a stew.

Generally, we think of soups as being served hot, but there are many varieties that are served cold. Jellied consommés may contain enough gelatin to gel when chilled (it takes 2% gelatin to gel) or gelatin may be added. Another soup, Vichyssoise, a cream of potato soup garnished with chopped chives, is usually served chilled. Borsch, gazpacho, and many fruit soups are served cold.

Of all the types of soups about which we've spoken, the most difficult to prepare and hold are cream soups. Since they are made with a milk or cream liquid, care must be taken to avoid curdling both during preparation and afterward in holding. If cream soups are prepared too far in advance, chances are that the quality will decrease greatly before the soup is served. Cream soups are also a hazard in sanitational terms since undesirable bacteria thrive in these conditions. Soups with a stock and water base do not present these problems in preparation or holding since there is no chance of curdling.

WORKBOOK EXERCISES

Lesson 6

Soups

1. What is the purpose of an appetizer soup?

2. How do a boullion and a consommé differ?

3. How are purees and bisques similar?

4. What is Vichyssoise?

5. What is the percentage of gelatin required in a soup to make it gel when chilled?

6. Why are cream soups more difficult to prepare and hold than other soups?

KEY TO WORKBOOK EXERCISES

Lesson 6

Soups

1. Stimulate the appetite.
2. A boullion is made from browned beef; a consommé is prepared by simmering veal, pork, or poultry. A consommé is also lighter in color than a boullion.
3. A bisque is a puree of shellfish (usually) with a bechamel or cream sauce added to the pureed product.
4. Chilled cream of potato soup garnished with chives.
5. 2%
6. They may curdle if a lot of acid is introduced to them or if they are exposed to high heat for a prolonged period of time.

SAUCES AND GRAVIES

A gravy or a sauce in meat cookery is used to enhance the flavor of the meat. Many times, the gravy or sauce that accompanies a meat product is more appealing to the customer than the item itself. Since gravies are made from meat drippings, there is a more limited variety of them than there is of sauces. Sauces are made from items not directly derived from the meat product but from others unrelated to the meat item.

Gravies, because they are made from meat drippings, have the definite flavor of the meat from which they came. Sauces, on the other hand, are often prepared without using any fat or liquid from the meat, thus not having the meat flavor. A sauce is a blend of flavors, many of them coming from non-meat products.

Some sauces and gravies may be served either thickened or unthickened. Seasonings are probably more important to sauces than to gravies since sauces rely on a blend of flavors to make them effective. It should be kept in mind that sauces and gravies should be used to enhance a product rather than to disguise a poorly prepared item. (Although history suggests this may have been the original intent.)

Sauces and gravies are selected for the foods they accompany. There are various items that are traditionally served together. Examples are: fried fish and tartar sauce, asparagus and Hollandaise sauce, roast beef and au jus gravy, and wild game and Cumberland sauce.

Sauces are sometimes used to add a contrasting flavor to the taste of a product. Some sauces are used to add flavor to an otherwise bland food (turkey and cranberry sauce). They may also be used to enhance the appearance of a food as is the case of a gelatin and mayonnaise sauce (chaud-froid sauce) used to coat a food item. Sauces may be hard or soft and served hot or cold, depending upon the nature of the sauce and the food item it accompanies.

Liquids Used for Sauces and Gravies

Although the liquid most frequently used in making gravy is water, milk, stock, tomato sauce, wine or many other liquids may be used.

Stock is frequently used in making sauces. Formerly, stock was made from meat and bones, but with more and more items that are purchased in the "ready-to-use" form, canned or dried stocks are now available. White stock is made from unbrowned beef, veal, chicken, or fish. Brown stock is made from browned meat and bones. The darkness is due to the marrow in the bones used in cooking.

Thickening Agents

Sauces and gravies are usually thickened with flour, although cornstarch, waxy maize starch, or other starch thickeners may be used. Eggs or other protein foods are sometimes used in place of starch. Flour, eggs, and bread crumbs yield an opaque sauce or gravy. Potato starch, rice starch, cornstarch, waxy maize, and tapioca give a more clear mixture.

Beside differing in clarity, starch thickeners differ in their thickening power. This is why a recipe must be followed exactly (or alterations should be made when using a different thickener than what the recipe calls for). The result of substituting cornstarch for flour in the same amount would be a thicker sauce or gravy.

Lumps are usually produced when starch or flour are added to hot liquid. This is avoided by mixing the starch thickener with the liquid (while the liquid is not too hot) to form a very smooth slurry. The slurry is then slowly added to the hot liquid while it is stirred constantly. Good agitation (stirring) is necessary or lumping will occur.

Another thickening agent is a roux (ro͞o). It is made by blending flour and fat (usually in 50% portions by weight) and then cooking this paste for a few minutes without browning it. The roux differs from the slurry in that the fat dispersing agent makes a more flavorful product.

We have previously stated that a slurry is a cool mixture that is added to hot liquid. A rule used for blending roux into liquids is as follows: blend a cold roux into a hot liquid and a hot roux into cold liquid. This allows the final mixture to be below the thickening temperature of the flour and will result in a smooth product.

If a recipe calls for a "browned roux," it may be better to add pure caramel coloring to achieve the darker color rather than browning the roux. When a roux is browned, the flour breaks down and loses its thickening power. This also produces a bitter flavor.

Sauces

There are many basic sauces or "mother" sauces that can be slightly changed to produce secondary or "small" sauces. Some of the basic sauces are brown, white, velouté, bechamel, tomato, butter, and Hollandaise. Some sauces are made from liquids derived from meats. These are referred to as meat sauces. Other contain no meat liquids and are referred to as neutral sauces.

Brown Sauce

The brown sauce is one of the most common basic meat sauces. A brown stock is used for the brown sauce. Sometimes a browned roux is added to the stock. When a roux is browned, some of the flour's thickening power is lost. This means that additional flour must be added to the roux to obtain the necessary consistency in the sauce. The sauce is then slowly simmered until the taste of raw flour has disappeared. The longer cooking period allows flavors to blend and mellow, thus producing a better sauce. As with all sauces and gravies, the cook should taste and season all products before they are served.

This basic brown sauce may be changed in a variety of ways to produce secondary sauces. The following are some of the more common varieties:

1. Brown sauce + chopped mushrooms = mushroom sauce.
2. Brown sauce + dry red wine, chopped green onions, and beef marrow = Bordelaise sauce.

3. Brown sauce + orange and lemon peel and juice, ginger, port wine, and dry mustard = Cumberland sauce.
4. Brown sauce + chopped tomato and minced cloves or crushed garlic = Provencale sauce.

Velouté

A second basic sauce is the velouté. It is made from a white stock thickened with a white roux. It is cooked with vegetables and seasonings that are strained out before its use. (This should not be confused with a white sauce.) The white stock of the velouté is frequently made from chicken or veal. If it is a fish stock that is made into a velouté it is referred to as a sauce vin blanc (white wine sauce because white wine is used as part of the liquid).

Some variations of a velouté sauce are:

1. Velouté + cream = Supreme sauce.
2. Velouté + egg yolks and cream = Poulette sauce.

The velouté sauce is frequently referred to as a blond sauce. (Is it true blondes have more fun?)

Bechamel

A bechamel sauce is a meat sauce made from white stock with cream added as the liquid. If it is prepared in this manner it can be called a basic sauce. A type of bechamel sauce can be made from a velouté if cream is added to the velouté to thin the sauce. If prepared from a velouté sauce, a bechamel would technically be a secondary sauce.

A basic bechamel sauce can also be called a cream sauce. This sauce can be altered to make the following secondary sauces: Newberg, Mornay, tomato, A la King, and cheese.

White Sauce

A white sauce refers to a starch-thickened sauce where the flour is not browned. It is unlike a meat sauce in that stock is not added. The liquid of a white sauce may be milk or cream. Variations of the basic white sauce are made of practically anything imaginable and are made to various consistencies ranging from thin to very thick.

Hollandaise Sauce

Hollandaise sauce is a basic sauce made by beating melted butter into egg yolks over hot water and adding vinegar or lemon juice after the egg and butter are combined. It is one of the richest sauces since those sauces thickened with egg yolks make the richest of all sauces. These sauces are very difficult to make correctly since they must be heated slowly, cooked but must not be allowed to reach a simmering temperature. If this happens, the egg yolks will harden and will separate from the butter. A good method to use is that of "tempering." A small amount of hot milk is added to the egg mixture and stirred. This raises the temperature of the egg mixture. This tempered mixture is then poured into the remaining hot milk. The gradual heating of the eggs by adding hot milk prevents the eggs from hardening.

Like mayonnaise, a Hollandaise sauce will break if it is overcooked. This occurs because the emulsifier is stretched too far by extreme or extended heating.

Variations of Hollandaise sauce include Bernaise, Mousseline, and Remoulade sauce.

Although mayonnaise is not a variation of Hollandaise sauce, it is a sauce that is thickened with egg yolks and should be mentioned here. It is combined with various ingredients to produce tartar sauce and many salad dressings.

Tomato Sauce

Tomato sauce is made by blending a rich meat stock and tomato puree or tomato paste. It is thickened with a roux, simmered with vegetables and seasonings, strained, and served. Sometimes a neutral tomato sauce is made without meat stock. Another variation is made by cooking the sauce down until it is thick--then the roux is omitted.

Butter Sauce

A butter sauce adds richness to a food product. It is a good carrier of additional seasonings, as well. The butter may be used in a melted form or seasonings may be added to softened butter.

Melted butter blended with lemon juice and cayenne is called maitre d'hotel sauce. A lightly browned butter is a meuniere sauce and a darkly browned one is a beurre noir. (They are all seasoned as is the maitre d'hotel sauce.)

Softened butter may be combined with the following minced items or pastes to form sauces that carry the name of the additional ingredient: anchovys, capers, garlic, mustard, parsley, or green onions.

WORKBOOK EXERCISES

Lesson 6

Sauces and Gravies

1. Why is there a greater variety of sauces that can be made than there are gravies?

2. What is the major difference between a gravy and a sauce?

3. What is meant by "neutral" sauce?

4. Name the two basic types of stock and explain the difference between them.

5. Define slurry.

6. Define roux.

7. A basic sauce is sometimes called a ____________________ sauce and a secondary sauce may be called a _______________ sauce.

8. A velouté is made from a ___________________ stock.

9. Define bechamel.

10. What is the rule for adding roux to liquid?

11. What effect does browning have on flour?

12. Realizing the principle of #11 above, what adjustment would you make in a sauce that required a browned roux?

13. How do the following two sauces differ?

maitre d'hotel

meuniere

14. List the five main warm basic sauces.

a.

b.

c.

d.

e.

KEY TO WORKBOOK EXERCISES

Lesson 6

Sauces and Gravies

1. Gravies are made from meat drippings, but their number is limited.
2. A gravy is made from meat drippings and carries the flavor of the meat; a sauce has no special meat flavor.
3. It has no meat essence in it.
4. White and brown; brown is made from browned meat, white from unbrowned meat or fish.
5. A mixture of flour and liquid.
6. A mixture of flour and fat--usually in 50% ratio by weight.
7. Mother, small
8. white
9. A sauce made from a chicken or veal stock and then thinned with rich milk or cream.
10. hot roux to cold liquid; cold roux to hot liquid.
11. lessens its thickening power
12. Add flour to the roux to increase thickening power.
13. maitre d'hotel is an unbrowned butter sauce, meuniere is a browned butter sauce.
14. a. Brown
    b. Bechamel
    c. Velouté
    d. Tomato
    e. Hollandaise

H̄FS SPECIFICS : LESSON 6

The preparation of soups, sauces, and gravies in the H̄FS is generally the responsibility of one of the meat cooks. In special cases, sauces may be prepared by the station worker whose job it is to prepare the product requiring a sauce. Examples are Hollandaise sauce prepared by the vegetable cook for use on asparagus, and fruit sauce foruse on sponge cake that is prepared by the dessert cook.

Until recently, most soups in the H̄FS were prepared from scratch. Now they may be prepared from canned or dried products. The reasoning behind this is that the process of making soups from scratch is very expensive and very time consuming. The time involved is hardly justified if the same quality can be obtained from some type of convenience item that is easy to prepare.

All sauces and gravies in the H̄FS are prepared from scratch. The cooks feel that this is necessary since present convenience products are not of as high a quality as items prepared from scratch. In addition, not much additional labor is required to make gravies and sauces from scratch which further justifies this process to achieve a high quality product.

The equipment used by the station workers to prepare soups, sauces, and gravies varies depending mainly upon the quantity needed for service. Most soups and sauces are prepared in a trunnion or steam kettle in the worker's station. Gravies may be prepared in a steam kettle or on the range, depending upon which is easier. Most staple ingredients used in making soups, sauces, and gravies are found in the work stations. This limits the amount of walking a cook must do to obtain necessary ingredients from storage areas, thus saving time and energy.

When you analyze your establishment's procedures in making soups, sauces, and gravies, do not approach the workers with an attitude that "your way is right and their way is wrong". There is no absolutely correct way to run any establishment, and what's good for the H̄FS may not be good for your work place. Concentrate instead, upon discovering WHY your establishment performs certain activities and how this is beneficial to its overall operation.

HFS EXERCISES

1. Who is responsible for making soups in your establishment?

2. Are the soups served in your work place made from scratch, from canned products, or from dried soups?

3. List any soups served where you work that are served for a course other than "appetizer".

4. Consult with your head cook to determine how many different sauces and gravies are prepared in your work place; list them below.

5. From the above list of sauces, categorize them as being either "basic" or "secondary" sauces.

SKILLS

Soups, Sauces, Gravies

27. Use a wire whip to stir and blend
28. Use a ladle.
29. Prepare a Hollandaise sauce
30. Make a slurry
31. Make a roux
32. Thicken a gravy or a stew

RELATED SKILLS: #'s, 3, 10, 12, 23, 42, 53 (for ingredients).

ABOUT LESSON 7

The material in Lesson 7 deals with the basic types of desserts that are served in a food service operation and the forms in which they may be purchased. After you complete this lesson, you should have a knowledge of different types of convenience products in the dessert category and how to evaluate the considerations involved in whether or not to purchase such convenience items. You should also know how to portion desserts and know why portioning is important in the operation of a food service facility.

STUDENT DIRECTIONS

1. Read pages 1-7.
2. Complete the Workbook Exercises on page 8.
3. Check your answers with the Workbook Key on page 9.
4. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #5.
5. Read the HFS SPECIFICS on pages 10 and 11.
6. Answer the HFS questions on pages 12 and 13.
7. On page 14 you will find a list of SKILLS appropriate to this lesson. Follow the procedure for checking off SKILLS.
8. You have now completed Lesson 7. If you still feel you do not understand any part of this lesson, consult with a classmate, a fellow worker, the establishment supervisor, or the University instructor about your questions. You will be given a quiz on the material presented in Lesson 7 during the next class seminar.

DESSERTS

The word "dessert" can be defined in many different ways. Generally, we will assume that it is the final course that serves to round out the meal both nutritionally and by fulfilling individual tastes. It may be served hot or cold and may be light or heavy. The dessert usually provides sweetness to satisfy the appetite. It should be attractive in color and served in an appealing manner.

Desserts should complete the meal but not dominate it. The product should be of high quality with good flavor, color, and texture. A very important aspect of desserts is that they incorporate many essential vitamins and minerals that may not be provided in the other courses of the meal.

There should be a good variety of desserts served at each meal. They may include pies, cakes, puddings, ice creams, sherberts, gelatins, fruits, and others too numerous to mention. Today, with all the frozen desserts, mixes, and convenience foods, it is hardly worth the time and effort involved to prepare many foods from "scratch." Therefore, we will assume that cakes are made from mixes, pies are bought frozen, and as many other high quality convenience foods that can be purchased are used. This will eliminate the bakery unit of the kitchen to a large degree.

For our purposes we will divide such as pies and cakes dessert items into four categories. (We will buy other dessert items in convenience forms.) They are fruits, gelatins, milk and eggs, and desserts made with cereals.

Fruits

All types of fruits may be used for desserts. They may be served alone as fresh, baked or stewed, canned or preserved or frozen, with or without sugar. These are light desserts and should be served at the end of a heavy meal.

Fruits may also be used in fruit puddings, in fruit souffles or whips, or in a variety of frozen desserts such as sherbert, ice cream, or water ice.

The following methods are used for cooking fruits:

1. Cooking in a sirup or water solution. This is the method most frequently used to cook fruit. It retains the original shape of the fruit if a low temperature and low sugar concentration is used.
2. Baking such fruits as apples or pears is a popular method of cooking. The oven temperature should be about 350°. This method, if recipes are followed, also retains the shape of the fruit.
3. Some fruit is glazed. This can best be done in the oven. A thin sirup is prepared from water or fruit juice, sugar, and seasoning and is poured over the fruit. This is covered and placed in the oven for 10 to 20 minutes. During the cooking period the fruit should be turned once.
4. Fruits may be broiled. Ingredients such as lemon, spice, and various seasonings may be added before placing the fruit under the broiler.
5. Occasionally fruits are braised or sauteed in a pan in a small amount of fat or oil.

Gelatin Desserts

Since we have previously discussed preparing gelatin in the salad section, we will just mention what types of gelatin dishes are appropriate for desserts.

Gelatin may be served plain, with fruit (except fresh pineapple), or it can be combined with a variety of dairy products. (Fresh and frozen pineapple contain an enzyme that prevents the gelatin from hardening. This enzyme is destroyed by heat, thus canned pineapple can be used in gelatin.)

Milk and Egg Desserts

Custards, puddings, and souffles are our primary concern in this section. In the majority of cases, a double boiler or a trunnion is used in the preparation of these desserts (except souffles). Milk scorches easily and eggs toughen if the heat is too high.

True custards consist only of eggs, milk, and a small amount of sugar added for flavor. One whole egg or two egg yolks will thicken one cup of milk, but more eggs are used if the custard is to be unmolded. They may be baked, stirred or steamed to finish cooking.

When preparing stirred custards, the mixture is placed in a double boiler. The water in the boiler is kept below boiling temperature since excessive temperatures and prolonged cooking causes a separation of the egg mixture and a curdled product.

In preparing baked custards, the eggs are beaten just enough to mix them well and the milk is stirred in. The mixture is poured through a strainer before baking to remove any stringy egg white. (The dishes are placed in a pan and placed in the oven. The water should be level with the amount of custard in the dish.) Custards may be baked without a water bath. This shortens the cooking period but produces a low quality product.

Puddings are served in a variety of ways to produce satisfying desserts. They range from plain puddings to bread puddings (a variation of a custard) to many other more fancy items. Although it is possible to prepare pudding from scratch, it is a very time-consuming and expensive process which has been replaced in most operations by some form of convenience item.

Desserts with Cereals

Many desserts are made with cereals such as tapioca, flour, or cornstarch and include the addition of eggs and milk. Flavorings, fruit sauces, and a variety of ingredients may be combined to produce many different and interesting desserts. Recipes should be followed precisely to produce a high quality product.

CONVENIENCE DESSERTS

Over the past five or ten years, convenience foods in general and particularly in the dessert category have come to play a very important part in the food service industry. As these convenience foods have improved in quality, they have become an acceptable substitute for the product prepared from scratch.

Today, although some establishments may pride themselves in their homemade pies, cakes, and baked goods, an overwhelming majority are turning to convenience products in part or in total. This may be for a variety of reasons. In the first place, although convenience products look to be more expensive, a close analysis shows this to be untrue. Especially in the bakery, the cost of manpower, product spoilage, waste, and time necessary to make dessert items from scratch greatly exceed the price of the convenient counterparts. Payroll cost is reduced since these items eliminate skilled employees used in basic food preparation. Because of the standardized yields in convenience products, it is easier to determine cost and portions. These items are also easy to store and inventory as compared to bulks of flour, sugar, and the like. In most cases, convenience foods do not require cooking but only heating (if any preparation is necessary). These products also offer greater menu flexibility and variety. Many of the ready-to-serve products eliminate waste and spoilage due to overproduction since the cook can just prepare what is needed when it is needed.

Due to the rigid quality control tests the convenience foods go through, there is guaranteed uniformity in quality and flavor. Since high quality raw foods are always used in their preparation, the results are high quality end products. In terms of being economical, convenience foods meet the need of a price that does not fluctuate because of the season.

Pies

Many different companies produce frozen pies that are either ready-to-serve or ready-to-bake. These come in a variety of sizes as well as types (by content). The majority of fruit pies are ready-to-bake; cream pies come ready-to-serve. Depending upon how fancy the product, the dessert cook may have to garnish a pie for serving or merely serve it. Instructions for baking and serving are printed on the package.

Some local operations may bake pies every day and deliver them ready to cut and serve. This may be a more economical method if the food service establishment can order accurately.

Still other companies make pie shells that can be filled with convenience ready-made pie fillings or homemade filling. Or, some food service facilities prefer making their own crusts but using ready-made filling or box pie-filling mixes. There seems to be an endless variety of choices for the establishments to make in order to suit their needs.

Portioning pies for service, although it seems simple, can mean an increased food cost if the correct number of slices per pie is not achieved. This also can cheat the customer if a standard size of the pie slices is not maintained. The best way to be accurate is to use a pie marker. The markers come according to the number of cuts desired. The marker is round with spiny arms extending from the center. The marker center is placed in the center of the pie and depressed slightly. The spines mark the pie top and form the cutting lines. The marker is removed and a pastry knife or other dull spatula is used to cut the slices. The slices should be removed with a pointed spatula to retain the shape of the slice and eliminate the filling from falling out.

If a pie marker is not available, the whole pie should carefully be divided into slices of equal size. This is done by finding the center of the pie by making surface marks from one side to the other in two places (the marks should be only near the center and should be made on a line that cuts the pie pan in half). For an even number of slices, cut the pie in half first. Then divide each half into equal parts, depending upon the desired number of slices. For an odd number of slices, make a very light line with the cutter to cut the pie in half. Then, make light marks along the edge of the crust to determine the size of each slice before cutting. Accuracy in portion size is a necessity to maintain cost controls and customer satisfaction.

Cakes

Use of convenience cake products is on the increase in food service operations. The type of convenience products purchased largely depends on the size of the establishment, the facilities it has, and available labor.

Some operations may choose ready-to-serve frozen cakes. Generally, these are packaged in small quantities--about enough for 12 servings or less.

Another possibility is purchasing cakes daily from a nearby bakery. In order to avoid unnecessary waste, it is necessary to order only what will be used in one day.

Box cake mixes have greatly simplified baking in the establishment. The dry ingredients are pre-measured and require only addition of liquid and eggs before mixing. The box cakes allow the establishment to prepare any necessary amount needed for a particular day. Although their preparation requires labor and facilities for baking, many operations prefer this type of convenience product.

Cake frostings come in ready-to-use cans or in pre-measured boxes. The box frostings require addition of at least liquid (usually water or milk) and possibly butter or margarine. When an operation chooses either one, it must consider that the box mix requires manpower to prepare it, time to make it, and the addition of ingredients that the ready-to-use frosting does not.

Puddings

The puddings used in today's quantity food operations are almost always convenience food items. The box mixes may be of two different varieties: pre-cooked (instant) to which only milk is added or that to which milk is added before it is cooked. Pudding also comes ready-to-serve in cans.

In conclusion, it is the responsibility of each individual establishment to make decisions upon use of convenience products. These decisions are usually based upon available facilities, necessary labor, comparing costs of similar items, and quality of the food items.

Conclusion

It should be understood that this unit was intended only to give you a very general understanding of basic desserts. The preparation of most desserts is not as difficult as most of the other station activities that we have described. This is primarily due to the incorporation of convenience food items into the operations of most restaurants and other quantity food production establishments. In many cases, the same principles encountered in dessert preparation have been explained in other sections of this course.

WORKBOOK EXERCISES

Lesson 7

1. Once custards are cooked they must be refrigerated. Why do you think this is necessary?

2. Considering what you know about sauces, what would you say is the purpose of a sauce in dessert preparation?

3. What two purposes would you say a whipped topping on a piece of pie has?

4. How many pieces of cake 2" x 3" can you cut from a cake pan that measures 1-1/2 feet x 2 feet?

5. Describe how you would cut a layer cake so that you have 12 pieces of equal size.

KEY TO WORKBOOK EXERCISES

Lesson 7

1. Bacteria will multiply rapidly in warm conditions.
2. They add interest and flavor to a bland tasting dessert item.
3. It serves as a garnish and also adds flavor to the pie.
4. 48 pieces
5. Find center of cake; divide cake in half with light mark across icing; divide in half again to section off four quarters; divide each quarter into three equal parts; check to see that lines form 12 equal parts; cut through both layers of cake on lines.

H̄FS SPECIFICS: LESSON 7

The H̄FS employs one full time worker as its dessert cook. The responsibilities of this person include baking pies and cakes, making puddings and gelatins, making and applying dessert toppings, sauces, and icings, portioning finished desserts, and serving ice cream dishes.

The pies in the H̄FS are all purchased frozen. Some of these must be baked before serving while others are ready-to-serve. The use of convenience pies in the H̄FS greatly reduces the amount of work involved in the dessert station. Some pies may require an additional topping, which the dessert cook prepares and places on each individual cut after portioning.

Cakes in the H̄FS are made from pre-packaged mixes that require the addition of eggs and liquid. The dessert cook follows the box directions for combining ingredients, mixing and baking the cakes. These cakes may have to be iced; if this is the case, a box icing mix or ready-to-use icing is used. The cook may be required to prepare a sauce or topping for the cake that is applied after portioning and before serving.

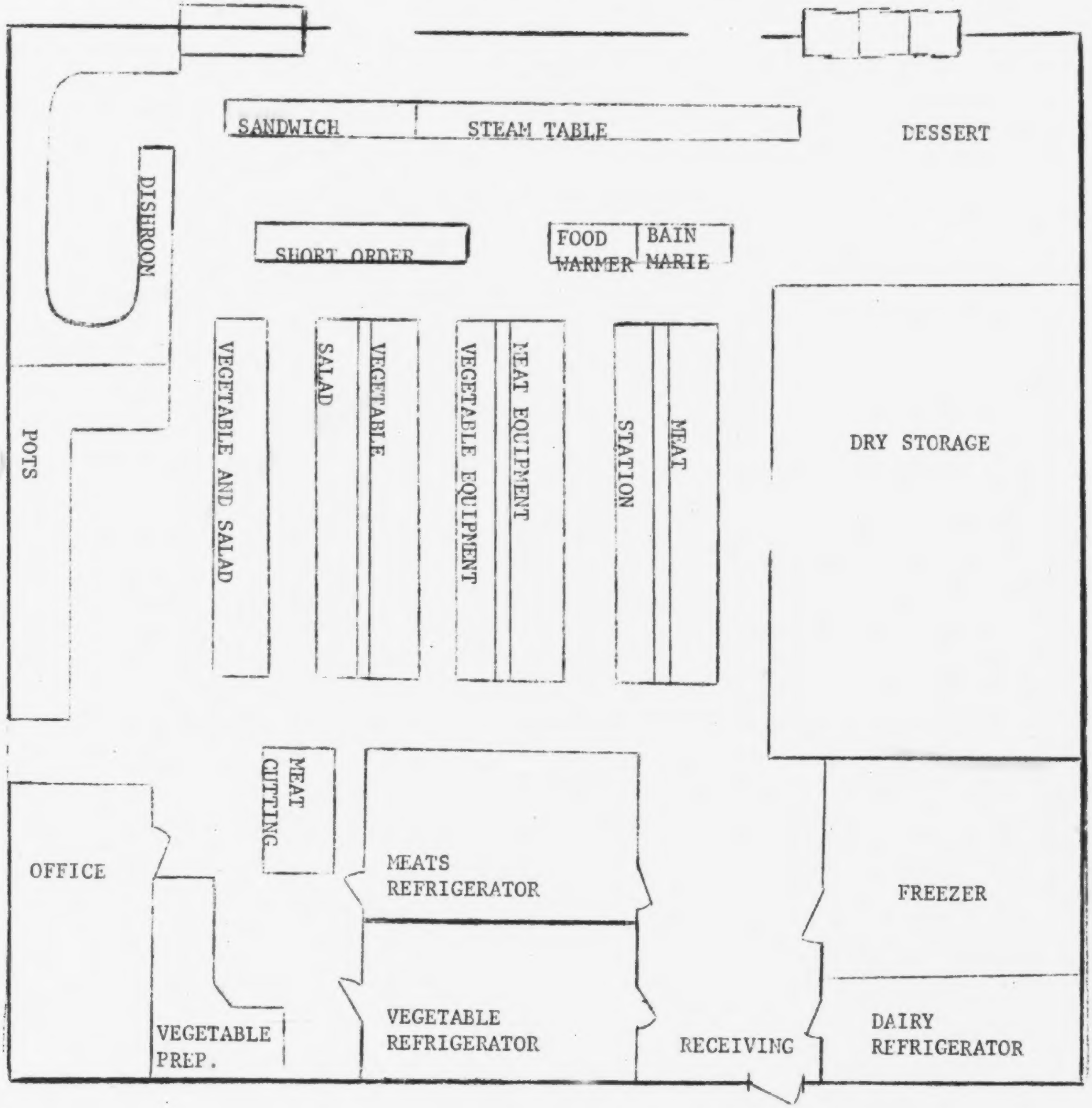
Gelatins and puddings are also made by the dessert cook. They are usually made from box products, although puddings may be purchased ready-to-serve. A variety of fruits, toppings, and/or sauces may be used in gelatin and pudding preparation to produce an attractive, appetizing dessert.

Ice cream products are usually made to order by the dessert cook. During the serving periods, the waitresses make their requests at the window in the dessert station and receive the item there.

Once they are prepared, some desserts must be refrigerated or frozen. The dessert cook is responsible for properly storing these products before they are served in order to retain a high quality product. The dessert cook is also responsible for storing leftover desserts. If these are not properly handled, it could mean a loss to the establishment. Desserts that need to be refrigerated before serving are frequently placed in the pass through refrigerator. This makes the dessert supply easily accessible to both the waitresses who remove the desserts and the cook who supplies the desserts.

Like the ice cream dessert products, portioned pies and cakes that have been placed on plates are placed on the shelf beside the window in the dessert station where they can be easily reached by the waitresses. Before they are placed there for serving, they may be placed on trays and stacked on the adjustable shelving in the dessert station for easy access.

The set up of the dessert station was designed to allow space for moving in a relatively compact area. (See Figure 5) Staple products are kept in movable containers under the work table along the wall. Smaller containers of ingredients that are used frequently are stored on shelves above the same work table. The trunnion kettle is used for preparing sauces that must be cooked. It is also used for making gelatin products. The mixer is used for combining ingredients for cakes, icings, and toppings. All baking is done in the stack ovens in this area. Keep in mind that the "dessert station" in your establishment may not be organized like the one in the HFS. The activities performed here may be done in many different areas in the establishment where you are employed. Note also, that there is no large bakery unit in the HFS. All breads, rolls, and other such products are purchased in ready-to-use or ready-to-serve forms in order to eliminate the cost of labor and the cost of equipping and operating a large bakery unit.



SANDWICH
STEAM TABLE
DESSERT
DISHROOM
SHORT ORDER
FOOD WARMER
BAIN MARIE
VEGETABLE AND SALAD
SALAD
VEGETABLE
VEGETABLE EQUIPMENT
MEAT EQUIPMENT
STATION
MEAT
DRY STORAGE
POTS
MEAT CUTTING
OFFICE
MEATS REFRIGERATOR
FREEZER
VEGETABLE REFRIGERATOR
RECEIVING
DAIRY REFRIGERATOR
VEGETABLE PREP.

(NOT TO SCALE!)

FIGURE 1.2: $\overline{\text{H}}$FS KITCHEN

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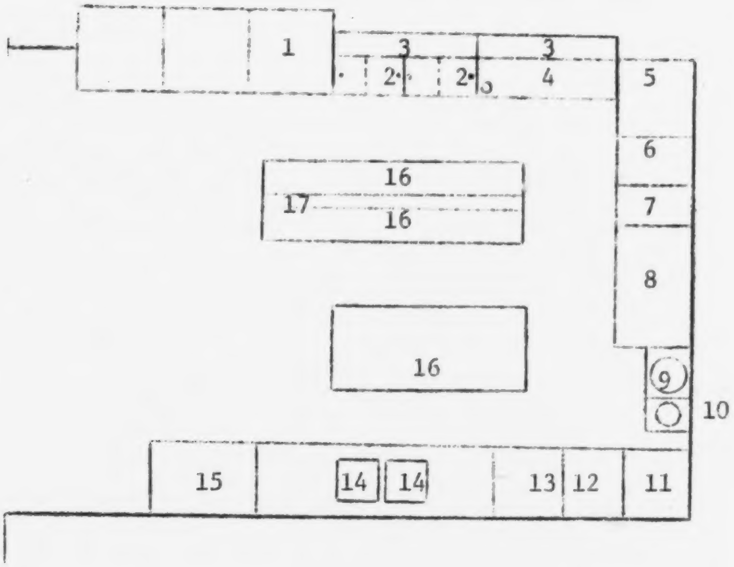
Figure 5 : DESSERT STATION



KEY

1. Refrigerated pass-through for desserts
2. Ice cream freezing unit
3. Open service window
4. Dessert pick up station
5. Storage for serving plates and dishes
6. Stack shelves for finished desserts
7. Cooling racks
8. Oven
9. Trunnion kettle
10. Mixer
11. Storage shelves for dry ingredients
12. Freezer
13. Refrigerator
14. Sinks and drainboard
15. Shelves for clean pans and utensils
16. Work table
17. Shelf for holding recipes and worksheets

HFS EXERCISES

1. Draw a rough layout of your bakery/dessert area including equipment.

2. List all the desserts served in your work place for any one meal and determine which belong in the categories mentioned on page 1 of "Desserts."

3. Name some dessert items in your establishment that are prepared using canned fruit;

   items using fresh fruit:

4. List as many convenience foods as you can that your work place uses in making desserts.

5. What is done with leftover cake and pie in your work place? If it is saved, how is it stored, and how long is it kept?

SKILLS

Dessert Preparation

33. Whip egg whites
34. Prepare a custard
35. Prepare a cooked fruit dessert
36. Make a dessert
37. Make a dessert topping or sauce
38. Slice a pie
39. Portion a cake (2 different skills)
40. Use a scoop for ice cream

RELATED SKILLS: #'s 10, 14, 16, 22, 23, 27, 42.

ABOUT LESSON 8

The material in Lesson 8 deals with the principles of preparing breakfast items and sandwiches. After you complete this lesson, you should be familiar with all types of egg preparation, hot cereal preparation, and preparation of other breakfast items. You should be able to prepare quality products in these three categories. From the sandwich section, you should learn how to set up a sandwich station so that you can prepare sandwiches quickly and with an absence of unnecessary motion. You must be able to portion both solid and salad-type sandwich ingredients and, when required, you should be able to prepare high quality sandwich fillings. With practice, you should be able to prepare both high quality breakfast and sandwich products--the main key here is good organization.

STUDENT DIRECTIONS

1. Read pages 1-6.
2. Complete the Workbook Exercises on pages 7 and 8.
3. Check your answers with the Workbook Key on page 9.
4. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #5.
5. Read the HFS SPECIFICS on pages 10 and 11.
6. Answer the HFS questions on page 12.
7. On page 13 you will find a list of SKILLS appropriate to this lesson. Follow the procedure for checking off SKILLS.
8. Read pages 14-17.
9. Complete the Workbook Exercises on page 18.
10. Check your answers with the Workbook Key on page 19.
11. If you have answered incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #12.
12. Read the HFS SPECIFICS on pages 20 and 21.
13. Answer the HFS questions on page 22.
14. On page 23 you will find a list of SKILLS appropriate to this lesson. Follow the procedure for checking off SKILLS.
15. You have now completed Lesson 8. If you still feel you do not understand any part of this lesson, consult with a classmate, a fellow worker, the establishment supervisor, or the University instructor about your questions. You will be given a quiz on the material presented in Lesson 8 during the next class seminar.

EGG AND BREAKFAST DISHES

Classifying and Grading Eggs

Fresh eggs come in various sizes and grades. The size of an egg has nothing to do with its grade. The weight of a dozen eggs of a particular size determines how the eggs are classified. The following chart expresses this:

Size (Weight Class)	Minimum Weight/Dozen
Jumbo	30 ounces
Extra Large	27 ounces
Large	24 ounces
Medium	21 ounces
Small	18 ounces
Peewee	15 ounces

If you remember that the minimum weight for LARGE eggs is 24 ounces, it is easy to find the other weight classes by adding or subtracting three.

Egg grades are determined by appearance and condition of the shell and the contents of the shell. This can be done by breaking the egg on a flat plate or by candling. The candling process involves holding the egg before a bright light and looking through the porous shell. The candler can see the size of the air pocket in the egg which is small when the egg is fresh.

U. S. quality grades are AA, A, B, and C. The AA eggs are the finest quality. The A grade is suitable for table use. Grade B eggs are used primarily for baking. Grade C eggs are only used for baking. It is unusual for a food service establishment to receive eggs below Grade A quality.

Because egg quality deteriorates very quickly when exposed to warm temperatures, they should be refrigerated until they are to be used. It is best to put them in a covered container since they pick up off-flavors through their porous shells. Eggs should never be stored near onions, melons, or cheeses for this reason.

Egg Cookery

The cooking process changes the texture and flavor of eggs. Besides making eggs more palatable, cooking makes the egg white easier to digest. There are many popular methods of preparation of which the following are most common:

Poaching

Only the finest quality eggs (Grades AA and A) should be used for poaching. Eggs of lower quality have thinner whites that break up in the poaching process. This results in an egg yolk with very little white surrounding it.

To poach eggs, break them individually into a small container or on a small plate. Add one teaspoon salt and one tablespoon lemon juice or distilled vinegar to each quart of water used. (This makes the egg more tender and causes better coagulation of the white.) Carefully transfer the egg into the simmering water (not boiling) by sliding it in along the side of the pan. (The water in the pan should be at least one and one-half inches deep.) Simmer the eggs about four or five minutes until the whites are set and the yolks are firm. Remove from the water with a slotted spoon or a skimmer and serve immediately.

Simmering

Eggs should never be boiled--only simmered. This helps prevent overcooking. The following simmering methods are used to cook soft cooked and hard cooked eggs:

1. Place eggs in boiling water. Return to simmering temperature and cook to desired doneness. Soft cooked eggs require three to five minutes, medium eggs cooked seven to eight minutes, hard cooked eggs about 15 minutes.

2. Place eggs in cold water. Bring water to a boil, reduce to simmer, and cook to desired doneness. Soft cooked eggs require about one minute, medium cooked eggs three to five minutes, hard cooked eggs eight to ten minutes.

3. Place eggs in a pan and cover them with hot water. Bring the water to a boil, reduce heat, and simmer for about three minutes (soft cooked). Medium eggs require about six minutes, hard cooked eggs, about 11 minutes.

4. Place eggs in pan in the steamer and follow steamer directions for preparing soft cooked or hard cooked eggs.

NOTE: After removing hard cooked eggs from the heat, cool the eggs by placing them immediately in cold water. This prevents a greenish ring from forming around the yolk which makes the egg look poorly.

Frying

Only high quality eggs should be used for frying since they produce a better looking fried product. Eggs may be fried in butter, margarine, shortening, or any other suitable fat. The temperature of the fat is very important since, if it is too hot, it will brown and toughen the eggs. If it is not hot enough, the egg will have a tendency to spread (especially if frying is done in a large pan or on the griddle). Clarified butter is a good fat to use since it does not burn quickly and gives flavor to the eggs. After the egg is placed in the fat, it may be cooked with or without turning it over, it may be covered so that a film covers the yolk, or hot fat may be spooned over the egg. The cooking process should be completed as quickly as possible since prolonged cooking toughens the egg.

Scrambled Eggs

Grade A or Grade B eggs are usually used for scrambling. It is rare to find any other than Grade A eggs in a good food service operation. The eggs are broken into a bowl and beaten slightly with a fork or wire whip. Cold water, milk, or cream (about one tablespoon per 2 eggs) may be added to give the eggs a smoother texture and better flavor. This mixture is placed in a heated, buttered pan. The eggs should start to cook as soon as they are put in the pan. The mixture is stirred gently so that all of it cooks evenly. Care should be taken not to overcook the eggs or to cook them at too high a temperature. This toughens them. Since the eggs will continue to cook after removal from the pan, they should be slightly under the desired doneness when removed from the heat. They should be served immediately. In some establishments, dried eggs may be used for making scrambled eggs.

Shirred Eggs

Eggs of high quality are broken into greased tins or baking dishes and are placed in a 350° oven for about 20 minutes or until firm. They may also be placed on the top of the range first (until the white sets) and then finished in the oven or under the broiler. Care should be taken not to cook the eggs to too hard a state since cooking will continue after the eggs are removed from the oven. The heat retained by the dish causes the cooking to continue.

Omelets

Plain French omelets are made of the same ingredients as scrambled eggs. They are cooked differently, though. The beaten egg mixture is not stirred but lifted so that the uncooked eggs run to the bottom of the pan. The result is an egg item in one solid piece. To serve the omelet, fold it in half with a spatula, and serve. A variety of ingredients including fruits, cheese, vegetables, or meats may be added to the plain omelet once it has started to set in the pan. The fruits should be well-drained and meats should be pre-cooked.

A fluffy omelet is made by separating egg yolks from egg whites. The yolks are beaten separately from the whites (they too are beaten)1 The whites are folded into the yolks. The mixture is poured into a frying pan containing hot butter or margarine and cooked on the range for one minute to start the cooking. It is then placed in a 325° oven for 15 or 20 minutes to complete the cooking process. During this time it should not be disturbed. A cut is made across the center and it is folded in half and served like the French omelet. Like the French omelet, it may also have a variety of jellies, meats, or other ingredients added to it.

Souffles

The procedure for preparing a souffle is similar to that of the fluffy omelet. The egg yolks are whipped with a fork or wire whip until they are well blended. The liquid used is a thick white sauce. A small amount of this white sauce (heated) is added to the egg yolks. This mixture is then added to the rest of the hot white sauce. The mixture is folded into beaten egg whites. It is placed in a baking pan and placed in a 300° F. oven until a knife inserted in the center comes out clean. The sides of the pan should not be greased since this prevents the souffle from rising. To achieve good (continued on Page 5)

height, a paper collar higher than the pan may be placed around the pan sides. The souffle rises against the paper during the baking process. The paper is removed before the souffle is served.

It should be noted here that frozen eggs and dehydrated eggs may be used in some establishments for baking and occasionally for scrambling.

Breakfast Dishes

Pancakes or Griddle Cakes

Pancakes are a favorite breakfast item. They are made from a thin batter and are baked on a griddle. The batter may be made from scratch although most quantity food places uses modern mixes which require addition of milk, eggs, and shortening or butter. If two tablespoons of shortening are used per cup of liquid, the griddle needs only to be lightly greased at the start of the baking process. A temperature of about 425° F. is necessary to grill pancakes. The pancakes remain very tender if cooked quickly and are turned only once. They should be turned when bubbles in the batter start to appear and the edge begins to show signs of drying.

Pancakes may be plain or various fruits, berries, or nuts may be added to the batter. When fruits or other ingredients are used, care should be taken that they are coated with batter so that they do not stick to the grill. These are baked in the same way as previously mentioned. Because of their nature, pancakes should be made to order when possible and served immediately.

Waffles

Waffles are made with a moderately rich batter containing sugar and more shortening and eggs than pancake batter. This results in a thicker batter.

Good waffles are tender and crisp. The batter should not be overmixed since this results in a tougher product. Crispness is achieved by baking at a high temperature (425°) on a waffle iron. They should be cooked until golden brown until steam stops coming from the waffle iron. Like pancakes, waffles should be made to order and served immediately.

French Toast

A third popular breakfast item is French toast. Like pancakes and waffles, French toast is served with butter and syrup--preferably warm maple syrup or a variety of berry-flavored syrups or jellies.

French toast is made by dipping slightly stale bread in a mixture of eggs, milk, and salt. Both sides of the bread should be coated. The bread is fried on a griddle or in a pan in butter until lightly browned. It is frequently sprinkled with nutmeg or powdered sugar and served immediately.

Meat Items on Breakfast Menus

Sausage, ham, and bacon are very popular breakfast items. These products are frequently pre-cooked prior to the breakfast hour in order to make preparation for serving easier.

Sausage

Like all other pork products, sausage should be cooked well done. Care should be taken to refrigerate sausage properly. Link sausage or sausage patties are available. Link sausage may be pre-cooked by blanching, pan broiling, or baking in the oven. Patties are pre-cooked by baking in the oven or pan broiling. Care should be taken not to overcook either type of sausage since this will result in a dry, tough product. Before serving the sausage links or patties may be heated on a greased grill or under the broiler.

Bacon and Ham

Slab bacon, Canadian bacon, and many varieties of ham are served as a breakfast item. Canadian bacon and some hams are pre-cooked and need only be heated for serving.

Slab bacon is frequently half-cooked before the breakfast period. This is usually done in the oven. Strips are placed on a baking pan or on racks in a pan. They are partially cooked, removed from the oven, and put aside; cooking is completed for service as needed. The final cooking process may be completed in the oven, on the range top, or under the broiler.

WORKBOOK EXERCISES

Eggs and Breakfast Items Lesson 8

1. What grade (s) of eggs are suitable for making fried or poached eggs?

2. Why are Grade C eggs used only for baking and not for fried eggs?

3. What are two basic rules to follow in egg preparation?

4. How can a greenish ring around the yolk of hard cooked eggs be prevented?

5. A. How are scrambled eggs and French omelets alike?

   B. How do they differ?

6. How does a fluffy omelet and a souffle differ?

7. What is the difference between pancake and waffle batter?

8. Why is it suggested that sausage be cooked to a well done state?

KEY TO WORKBOOK EXERCISES

Lesson 8

Eggs and Breakfast Items

1. Grades AA, A
2. The quality of the egg white is not as good as higher grades, nor are they probably as fresh and tasty.
3. Cook as quickly as possible; cook at low heat.
4. By taking all precautions not to overcook them and by placing eggs in cold water immediately after removing them from the heat.
5. A. The ingredients are the same and are in the same amounts.
   B. Scrambled eggs are stirred while cooking; the omelet is merely lifted so that the raw mixture flows to the bottom of the pan. This prevents the omelet from breaking.
6. A scuffle uses a thick white sauce as the liquid; fluffy omelets use water as the liquid.
7. Pancake batter is thinner and less rich than waffle batter.
8. Like other pork products, cooking to the well done state protects against the growth of the microbe that causes trichinosis.

HFS SPECIFICS

BREAKFAST AND SHORT ORDER COOK

The HFS employs one full time worker to prepare breakfast courses and short order luncheon items. The quick pace of this job requires that this person be very organized and be able to produce high quality items while hs ie under pressure.

The breakfast menu in the HFS includes all possible types of eggs, bacon, ham, sausage, hot cereals, hash brown potatoes, waffles, French toast, hot cakes. The short order cook is not responsible for preparing the toast or other bread items that may accompany these orders--this is the job of the sandwich station worker.

Every day, the shord order cook performs the following activities: He prepares fried eggs and scrambled eggs in specially treated egg skillets that are made from cast aluminum. Before the rush period, he breaks eggs one by one and places them in a container (which is later packed in ice to keep the eggs fresh), adds milk, seasonings, and thoroughly mixes the ingredients so that they can easily be portioned by ladling into a skillet for cooking. A container of melted, clarified butter is prepared and placed near the range for use in making fried and scrambled eggs. After each pan is used, it is not washed but wiped clean with a soft cloth. This prevents the skillet from losing its treated surface so that eggs will not stick to the pan. A large pan or skillet is filled with about 2 inches of water and placed on the range. This will be used for preparing poached and soft cooked eggs. The short order cook also prepares pancake and waffle mixes before the serving period and refrigerates them before they are to be used.

Once the serving period begins, the shord order cook studies order slips that waitresses place on the counter above the sandwich station. He prepares eggs in skillets or in the pan of simmering water on the range. He makes pancakes, French toast, sausage (that has been pre-cooked), and hash brown potatoes on the grill. He makes waffles on the waffle iron. Ham and bacon that have been precooked are heated under the broiler. Once an item has been prepared, it is put on a plate, passed to the sandwich station worker who puts any bread item required on the plate, and places the finished order on the shelf with the waitress' slip under it. It is necessary that the slips be placed on the counter in the order in which they are taken. If not, the first order on the counter may be the last one to be filled.

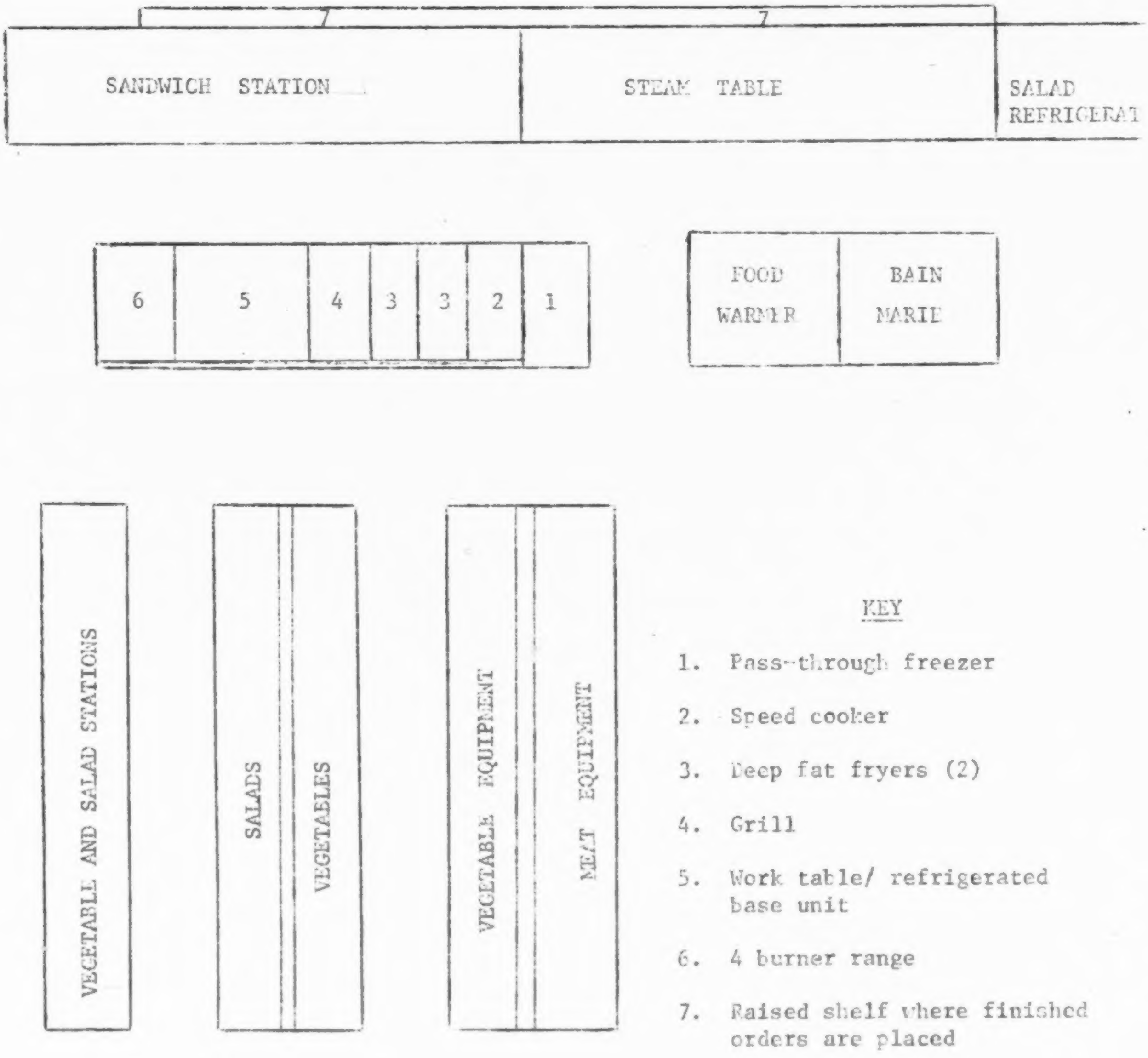
In some establishments, the shord order system differs. The waitresses may not write down the orders. They may just call them to the cook who must remember the order and prepare it accordingly. In some cases, the shord order cook may take the orders from the customers himself. You can see how difficult this can be--the cook almost needs eight hands!

Probably the most important task of the short order cook is his ability to recognize a quality product. Not only must he prepare food items properly---he must decide if the item is good enough to serve. This is a skill that comes largely with experience. Using proper temperature and times to prepare products becomes second nature with practice.

Once the breakfast rush is over, the shord order cook may prepare luncheon items to order if they require broiling or grilling. He is also responsible for deep fat frying items and cooking items in the speed cooker for the steam table. All frozen vegetables are steamed in the speed cooker as needed for service. In addition, he may have to garnish prepared items on plates, and may be required to store leftovers and un-used food items. The shord order cook must keep a clean, organized station and must practice safety procedures at all times.

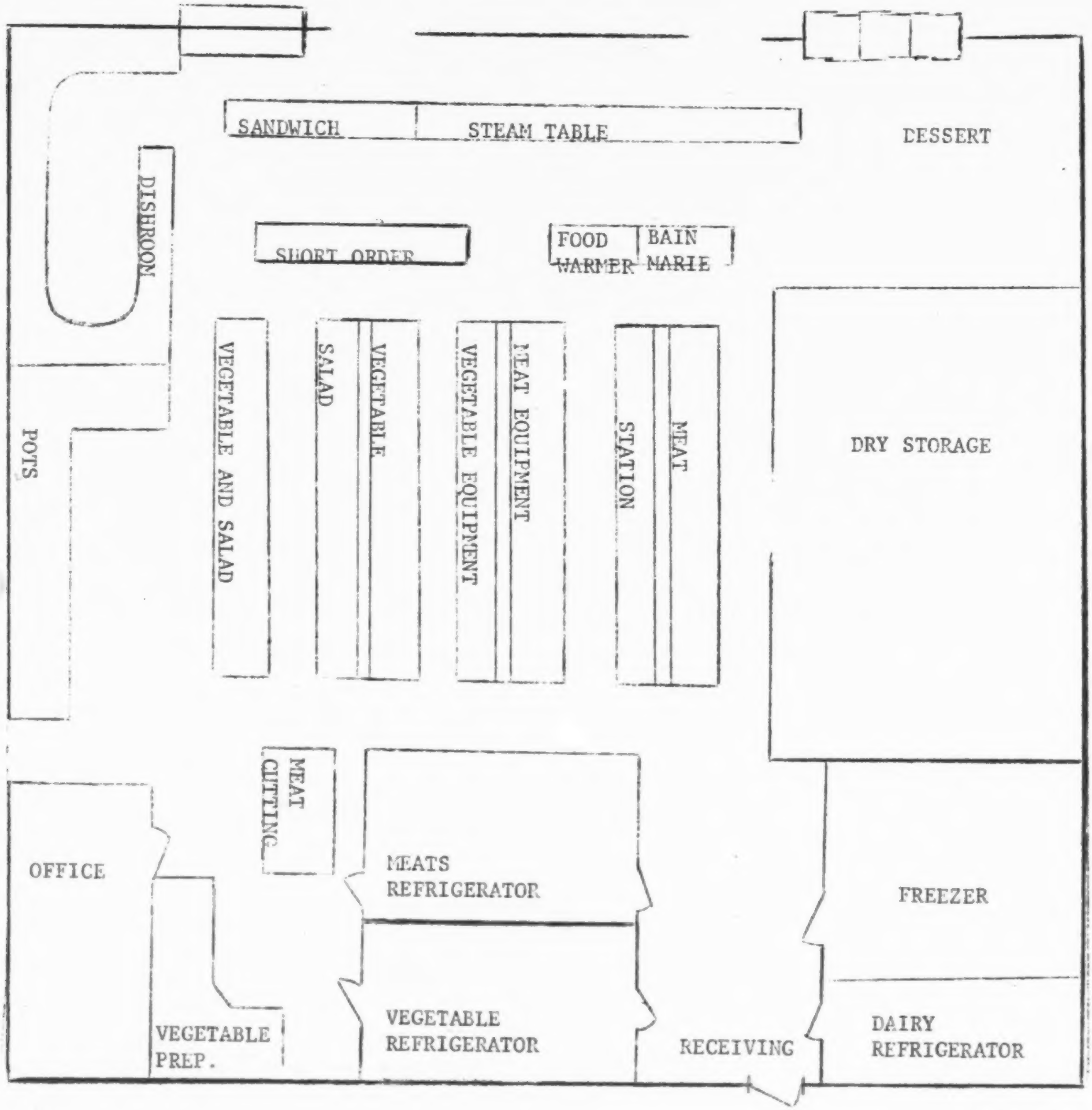
Now that you have been oriented to all the different tasks that the short order cook must perform, you should be able to see that a well-organized, compact work station is a necessity if this job is to be performed adequately. (See Figures 1.2 and 6 for placement and layout of this station.) The layout in Figure 6 emphasizes the arrangement of equipment and work areas to facilitate product flow during all peak periods of operation.

Figure 6 : SHORT ORDER STATION


7
7
SANDWICH STATION
STEAM TABLE
SALAD
REFRIGERAT
6
5
4
3
3
2
1
FOOD
WARMER
BAIN
MARIE
VEGETABLE AND SALAD STATIONS
SALADS
VEGETABLES
VEGETABLE EQUIPMENT
MEAT EQUIPMENT

KEY

1. Pass-through freezer
2. Speed cooker
3. Deep fat fryers (2)
4. Grill
5. Work table/ refrigerated base unit
6. 4 burner range
7. Raised shelf where finished orders are placed


SANDWICH
STEAM TABLE
DESSERT
DISHROOM
SHORT ORDER
FOOD WARMER
BAIN MARIE
VEGETABLE AND SALAD
SALAD
VEGETABLE
VEGETABLE EQUIPMENT
MEAT EQUIPMENT
STATION
MEAT
DRY STORAGE
POTS
MEAT CUTTING
OFFICE
MEATS REFRIGERATOR
FREEZER
VEGETABLE PREP.
VEGETABLE REFRIGERATOR
RECEIVING
DAIRY REFRIGERATOR

(NOT TO SCALE!)

FIGURE 1.2: HFS KITCHEN

5/30/72 MER 2254: SW

HFS EXERCISES

1. Describe the responsibilities (activities) of the person who prepares breakfast items in your establishment.

2. Draw the layout of the area where this person (described in #1) works.

3. How does this layout differ from the HFS Short Order station? (Figure 6)

SKILLS

Egg and Breakfast Items

41. Crack an egg without breaking the yolk

42. Separate egg white from egg yolk

43. Scramble an egg

44. Fry an egg

45. Poach an egg

46. Make an omelet

47. Make pancakes

48. Treat a frying pan for preparing eggs

RELATED SKILLS: #'s 2, 4, 9, 10, 11, 24, 27, 28, 33, 40, 64, 66.

SANDWICHES

Sandwiches are a very popular item in the American food service industry. The variety of breads and fillings satisfy a large number of different tastes. They may be prepared before service and wrapped or stored without loss of quality. They may also be made to order.

Sandwich bread should neither be soggy or dry. It should be fresh--many establishments use day-old bread because it is easier to work with and is still fresh and flavorful. A variety of different breads, rolls, and buns may be either fresh or frozen before use.

Types of sandwiches include open face, club, toasted, hot, grilled, and the regular "plain" types. (There are also many fancy sandwiches which we will not discuss.) The open face sandwich is exactly what it sounds like. The filling of the sandwich is open--not covered by bread. The club sandwich is made with three slices of bread, sliced meat, lettuce and tomato. Cheese may also be part of the filler. Toasted sandwiches are made with toasted bread items. They differ from grilled sandwiches in that only the bread is toasted. The grilled sandwich is grilled after the whole sandwich is made. Hot sandwiches usually are made with hot sliced meats and are covered with gravy.

The term "sandwich fillings" refers to the product between the slices of bread. It usually gives the name to the sandwich--for example "chicken salad." There are three basic types of fillings: sliced meats, cheeses, and salad fillings. The amount of each used in making sandwiches varies from place to place. Sliced meats and cheeses are weighed to control portion size. Salad fillings are usually scooped.

Sliced meats and cheeses look and taste better when sliced very thin. They are then weighed and placed by portion on portion papers to make the preparation easier.

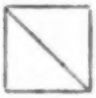
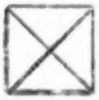
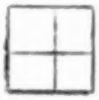
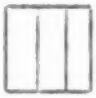
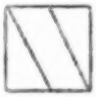
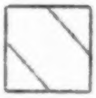
Salad fillings may be made from quality leftovers or from pre-cooked items. The fillings should be of proper consistency so they spread easily but are not runny. Runny fillings make the bread soggy, make the sandwich harder to eat, and provide a lower quality product. Too dry a filling makes a sandwich less tasty and harder to swallow. Recipes should be followed closely to produce a good filling.

In addition to the bread and the filling, a spread may be used in making sandwiches. This refers to the softened (not melted) butter or margarine that is placed on one or two slices of bread--depending on the nature of the sandwich filling. The spread may also take the form of mayonnaise, salad dressing, or a variety of other products. Spreads add to the palatability of sandwiches and prevent very moist fillings from soaking into the bread, thus creating a soggy sandwich.

If lettuce or other greens are to be used on sandwiches, they should be crisp, clean, and dry. When cold sandwiches are made in advance, it is advisable to place greens and particularly tomatoes on them at the last possible minute before serving. This prevents a soggy product from occurring.

Garnishing sandwiches varies from establishment to establishment. It may be as simple as putting potato chips on the plate or it may be very involved. We will not deal with garnishes here.

Sandwiches may be sliced in a variety of ways to produce an attractive product. They are also arranged in a variety of ways on the plate. Popular cuts include the following as pictured:

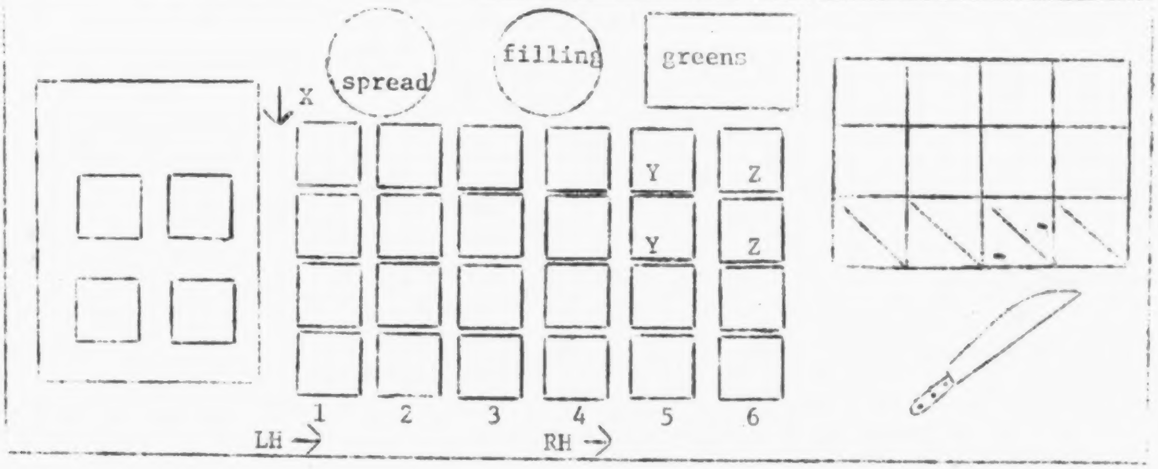
The size of the plate chosen for serving may depend upon how the sandwich is cut and garnished.

Setting Up a Sandwich Station

In order to simplify work in the sandwich station, it is necessary to organize the ingredients and tools in an "assembly line" fashion. Both hands should be used by the worker whenever possible. Body motions should be kept at a minimum since this causes fatigue. Sanitation and safety should be practiced at all times. Cleaning as you go reduces the work involved in maintaining a clean station.

The following procedure is one that is well-organized and very efficient. The station has been designed (set up) for a right handed worker.

The station set up is as shown in this diagram:



1. Bread loaf is divided in half and placed on tray at left.

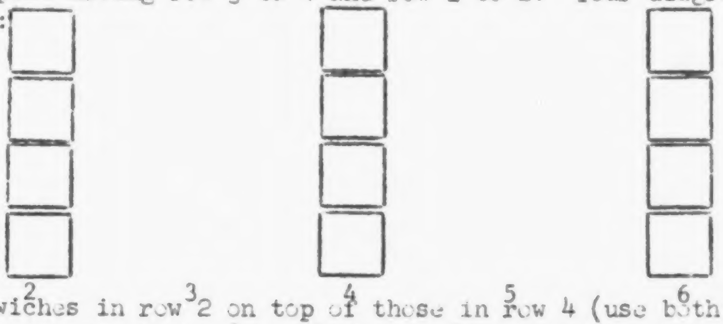
2. Pick up three slices with each hand. Using both hands, place the six slices in a row. (Leave about one inch between slices.) Left hand begins at LH, right hand at RH and moves in direction of arrow, dropping slices. This is repeated until four rows are in place.

3. For solid fillers: Dip spatula in softened butter and pick up enough to spread four slices of bread. Begin with row 1 at the back and work toward yourself (from X in direction of arrow). Hold the slice down with your left hand and spread the butter evenly to the edges of the bread in as few motions as possible. Continue until all rows are buttered. Place portioned meat, cheese, etc. on each slice in rows 2, 4, and 6.

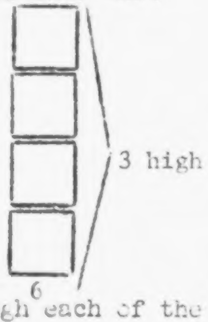
   For salad fillers: Place one portioned scoop of filling on each slice in rows 2, 4, and 6. Spread the filling evenly to the edges of the bread slice on which it was placed. Next pick up enough mayonnaise (spread) on its own spatula and spread it evenly (working from rear to front) on rows 1, 3, and 5.

4. If greens are desired, place them on the filling side of the sandwich.

5. Pick up two slices (one in each hand) at the rear of row 5 (y) and place them on the row 6 (z) slices directly across from them. Finish rows 5 and 6 and repeat moving row 3 to 4 and row 1 to 2. Your diagram should look like this:



6. Place the sandwiches in row 2 on top of those in row 4 (use both hands). Next move the two-high stacks (row 4) to row 6. You should have what looks like this:



7. Take the French or serrated knife and cut diagonally through each of the stacks in row 6. Make sure the three high stacks are even. Use a sawing motion with the knife--DO NOT PRESS DOWN HARD. This will crush the bread.

8. Unless sandwiches need to be wrapped, place them on empty tray (lined with paper) in the upper right hand corner of the diagram. Properly store until serving.

The above procedure works very well when making large quantities of sandwiches prior to the serving period. It does, however, require a large work area. When the work space is limited and when sandwiches are made to order, this system obviously cannot be used. In those cases, the sandwich maker should have assembled all breads, fillings, and spreads in the work area before the rush hour. She then proceeds to fill individual orders in the same manner as the short order cook described in lesson 8. Her efficiency is dependent upon the organization of her station and her ability to work quickly and complete the task with a minimum amount of movement.

WORKBOOK EXERCISES

Lesson 8

Sandwiches

1. Why is it important to have standard portion sizes?

2. Why is day-old bread recommended in fresh sandwich preparation?

3. Why is melted butter or melted margarine not used as a spread in sandwich preparation?

4. Besides being more flavorful and more attractive in sandwiches, why do you think meats and cheeses are thinly sliced?

5. Redesign the work station shown on page 17 for a left-handed person.

KEY TO WORKBOOK EXERCISES

Lesson 8

Sandwiches

1. It limits waste, produces a "standard" portion, and makes cost control easier.
2. It is easier to work with because it is more firm.
3. It makes the bread soggy.
4. It gives the sandwich a "thicker" appearance and the customers feel there is more meat or cheese in it.
5. It is the mirror image of the diagram on page 17.

HFS SPECIFICS
SANDWICH STATION

The luncheon menu in the HFS offers a wide variety of sandwiches including toasted, club, grilled, hot, and the plain types. It is the responsibility of the sandwich station worker to prepare these sandwiches in part or completely for service to the customer.

Because of the large volume of different types of sandwiches available in the HFS, the sandwich work area must be large enough for the worker to perform all necessary tasks. The station must be well-organized so that no time is lost in searching for necessary ingredients or in moving around unnecessarily. (See Figure 7.) The toaster is close to the work area so that slices of bread can be toasted within reach of the worker. All solid fillings (meats and cheeses) can be sliced on the slicing machine in the station and portioned there before use. Salad-type fillings may be prepared by another worker in the kitchen or may be prepared by the sandwich man.

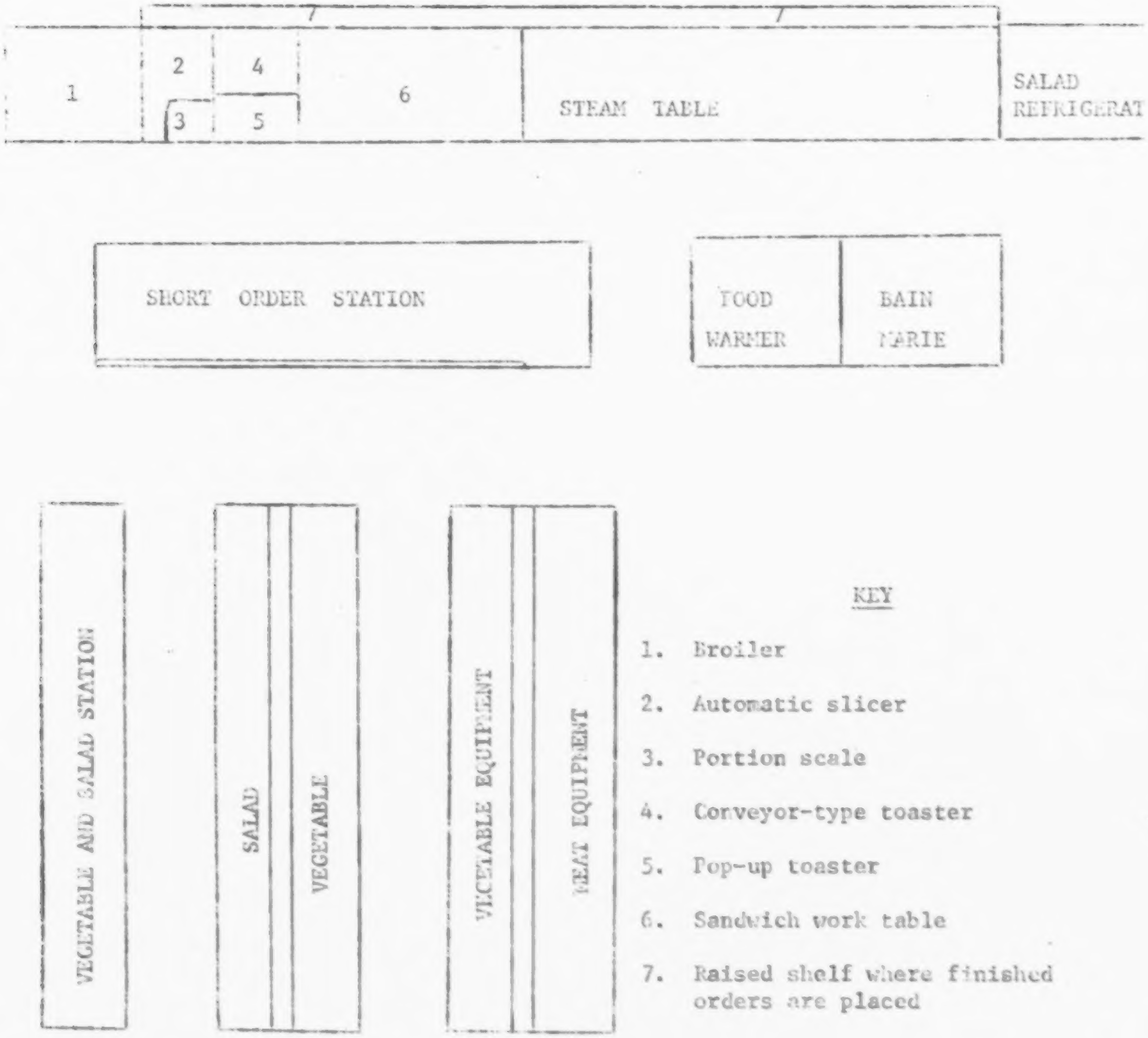
Occasionally, there are sandwiches that can be prepared ahead of the serving period and stored until serving. It is the HFS policy that when lettuce and tomato is part of a sandwich order that it is not placed in the sandwich but beside it on the plate. In this way, the sandwich can be prepared ahead of time without the lettuce and tomato without getting soggy. When an order requests lettuce and tomato, it can be added on the plate (which serves as an attractive garnish) without any extra trouble. Toasted, grilled, and hot sandwiches must be made to order. However, the ingredients can be portioned ahead of serving and, in the case of a hot sandwich, fully prepared and cut with the gravy being added when a request is made. Grilled sandwiches are made by the sandwich man and are grilled by the short order cook. Even in the case of sandwiches that are made to order, the sandwich station worker follows a daily worksheet that estimates how many of each type of sandwich will have to be prepared.

Once the rush period is over, the sandwich man may have to store leftovers properly. This may include breaking down sandwiches that were prepared in advance as well as other sandwich ingredients. Other tasks that this worker may have to perform include slicing breads or buns, slicing tomatoes, onions, and other garnishes in a variety of ways, garnishing sandwiches on plates, slicing sandwiches, trimming bread for various sandwiches, and using good judgement when re-ordering supplies for his station. Like all other workers, the sandwich maker must be able to prepare and recognize a quality product. He must also practice safety and sanitation principles at all times. A heavy rush period should not cause this worker to get sloppy with portioning and preparation nor careless in his use of utensils and equipment.

The morning responsibilities of the sandwich man include preparing all toasts, English muffins, regular muffins, sweet rolls, and coffee cakes that are requested. When an order is placed on the shelf above the sandwich counter, he reads it and prepares the bread item requested (if any), butters it (or places butter on the plate), and if necessary, places the order aside until the short order has prepared the other part of the order. This requires good coordination of the activities of the sandwich man and the short order cook to product items for an order at the same time so that both are of maximum quality.

The HFS SPECIFICS for both parts of this lesson may be quite unlike those found in your work place. Keep this fact in mind as you attempt to complete the HFS questions for Lesson 8. If you question any practices that occur in your place of employment, keep them to yourself until the next class seminar when you can feel free to bring them to light--otherwise, you may be out of a job!

Figure 7 : SANDWICH STATION


7
7
1
2
4
3
5
6
STEAM TABLE
SALAD
REFRIGERAT
SHORT ORDER STATION
FOOD
WARMER
BAIN
MARIE
VEGETABLE AND SALAD STATION
SALAD
VEGETABLE
VEGETABLE EQUIPMENT
MEAT EQUIPMENT

KEY

1. Broiler
2. Automatic slicer
3. Portion scale
4. Conveyor-type toaster
5. Pop-up toaster
6. Sandwich work table
7. Raised shelf where finished orders are placed

HFS EXERCISES

1. On the average, how many different types of sandwiches are served in your establishment each day? List them below.

2. How are sandwich ingredients for salad-type fillings portioned in your work place? Solid-type fillings?

3. What types of sandwiches are mass-produced in your establishment? (List all names)

4. How could the sandwich station in your work place operate more efficiently? (Be specific.)

SKILLS

Sandwich Preparation

49. Use automatic slicer for meats and cheeses
50. Spread butter or mayonnaise on bread
51. Grill a sandwich
52. Slice a sandwich
53. Use an automatic chopper-grinder to cut up ingredients for sandwich fillings
54. Portion solid sandwich fillings
55. Portion salad-type sandwich fillings

RELATED SKILLS: #'s 2, 4, 10, 21 (garnishing sandwiches), 40, 58, 64, 66, 73.

ABOUT LESSON 9

The material in Lesson 9 deals with the various methods used in meat cookery. After you finish this lesson, you should know which cuts of meat should be dry cooked and which should be moist cooked, you must be able to identify cooking methods as either being dry or moist methods, and you should be able to prepare meats using any of these methods.

STUDENT DIRECTIONS

1. Read pages 1-6.
2. Complete the Workbook Exercises on page 7.
3. Check your answers with the Workbook Key on page 8.
4. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #5.
5. Read pages 9-13.
6. Complete the Workbook Exercises on pages 14-16.
7. Check your answers with the Workbook Key on page 17.
8. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #9.
9. Read the HFS SPECIFICS on pages 18 and 19.
10. Answer the HFS questions on pages 20 and 21.
11. On page 22 you will find a list of SKILLS that pertain to this lesson. Follow the procedure for checking off SKILLS.
12. You have now completed Lesson 9. If you still feel that you do not understand any part of this lesson, consult with a classmate, a fellow worker, the establishment supervisor, or the University instructor about your questions. You will be given a quiz on the material presented in this lesson during the next class seminar.

MEATS I

A. General Meat Cookery

Before beginning a lengthy discussion of the various methods of meat cookery, it is useful to gain a general understanding of WHY meats are cooked. There are two generally accepted reasons for cooking meats: (1) to kill certain micro-organisms that are naturally associated with raw meats; (2) to make the meat more palatable. Along with these, you, the meat cook, should keep in mind three additional ideas: using methods of meat cookery to (1) conserve the maximum food value; (2) add eye appeal; and (3) still keep in mind the cost of these meats.

When meats are cooked, there are specific noticeable effects that result. The color of some meats change from red to brown or gray. The meat becomes firmer, and there is definite shrinkage from loss of moisture through evaporation, chemical, and physical change.

Broadly speaking, there are two ways to cook meat--(1) by dry heat and (2) by moist heat. Dry heat is usually used for more tender cuts and moist heat methods for less tender cuts. Dry heat methods and moist heat methods differ in that the latter depends upon cooking with liquid (moisture) or steam surrounding the meat. Examples of dry heat methods are roasting, baking, and broiling. Variations of moist heat methods are sauteing, braising, steaming, stewing, simmering, poaching, and frying.

Another important consideration beside method of cooking is the cooking temperature. A lower temperature generally means smaller cooking loss, more juicy meat, and more uniformity of the cooked product. Low temperature cooking, however, requires more time in the process to achieve the desired degree of doneness. This can easily dry out the product due to prolonged exposure. In selecting a cooking temperature, the following factors are involved:

(1) the total weight of the cut and its surface area; (2) the time allowed for cooking; (3) the composition of the meat (fat or lean); (4) type of meat (beef, veal, pork, etc.); and (5) the presence or absence of bone in the cut of meat. Another consideration is whether the meat is fresh or frozen. Generally, meat that is frozen will be taken from the freezer and refrigerated for about 24 hours before it is to be cooked. (This depends upon the size of the item--a whole turkey may take a few days to thaw). During this period, the meat thaws sufficiently and can be treated as fresh meat. It is possible to cook a frozen piece of meat, but the temperature must be low enough to ensure that the meat cooks all the way through before it burns or becomes overcooked on the surface.

Generally, how a cut of meat is prepared (either by dry or moist cooking methods) depends upon where it comes from in the animal. Cuts from the loin and rib areas are most frequently cooked by dry heat methods, although cuts from the chuck, rump, and round areas may be roasted. Most cuts from the other areas as well as thinner cuts from the chuck, rump, and round are cooked by moist heat methods. Recipes will give further more specific instructions for cooking various cuts of meat.

B. Roasting Meat

We will define the term roasting (or baking) as cooking foods in an uncovered utensil with no liquid added. Roasting is done in an oven. There are a variety of types of ovens; in your workbook, make a list of the various types of ovens in the establishment in which you work and what types of items are cooked in each. (This may require consultation with the cook.)

In the roasting process, it is sometimes necessary to elevate the product being cooked since juices or fats may collect in the bottom of the pan. If the item is not elevated, the lower part that is surrounded by the liquids may fry or braise, causing excessive loss to the item. Since temperature at the bottom of a roasting pan is always greater than in the oven itself, it is usually necessary to elevate the item being prepared. An exception to this is a bone-in rib roast where the rib ends and chine bone may hold the meat away from the bottom of the pan.

When choosing a pan for roasting, select one that is suited to the size of the roast. If too large a pan is used, the drippings will eventually dry up and burn; one that is too shallow will permit drippings to overflow.

A number of studies have been done regarding when roasts should be salted. Although some sources claimed that salting before cooking increased losses in moisture and a lack of surface browning, others reported that initial browning was slowed down but that the quality of the final product was not affected by this method. It may be wise to delay salting a roast until this browning takes place, or not to salt it at all.

A popular form of seasoning is a combination of chopped celery, carrots, and onions referred to as a "mirepoix" (me͞er´ĕ poy). This mixture may be added either at the beginning of the roasting period or closer to the end, depending upon how long the meat will remain in the oven. Since the purpose of a mirepoix is to add flavor to the drippings, it would be unwise to add it too soon (the vegetables would burn). Other herbs and spices may be put directly into the roast through slits that have been intentionally cut. Although this practice tends to flavor the meat, many juices escape as a result.

In a boned, rolled, roast the cooking time may require an additional five to ten minutes per pound more than one with the bone in. This is explained by the fact that a boned, rolled roast is usually much thicker and it takes more time for the heat to reach the center so that the roast is thoroughly cooked. A roast that has the bone in also cooks more quickly since the bone transfers heat to the meat. Likewise, a smaller roast cooks in a fraction of the time required to cook a larger one.

As has been previously explained, there are many factors that influence the choice of the roasting temperature. The type of meat, its size, its shape, whether or not it's frozen or fresh, the amount of bone, and the amount of time available before the item is to be served all play a part in this decision. Generally, beef, veal, and lamb should be roasted at 350° F. A larger roast may be cooked, however, at 225° F. Too high a temperature (over 400°) may destroy nutrients, as well as causing excessive shrinkage and loss. The decision of choosing a proper roasting temperature may be one that is greatly facilitated after experience.

There are various ways that one can determine the doneness of meat. One way, and perhaps the most accurate, is by using a meat thermometer. The thermometer is inserted in the middle of the thickest muscle; one must take care not to place the thermometer in fat or against a bone since the reading will not be correct for the meat. Using this method, one usually looks for an internal temperature of 140° F. for a rare roast, 160° F. for a medium roast, and 176° F. for a well done roast. (These temperatures may vary, depending on the establishment or source of information.) The desired internal temperatures for meats other than beef vary. Since pork is always cooked to the well done stage in order to kill trichinae organisms, it is cooked to at least 170° F. This produces the most flavorful product and one free of harmful organisms.

A second means of determining doneness of meats is following a chart that specifies the number of minutes cooking per pound. This method may be deceiving, however, since various roasts have different surface areas--those having greater surface areas cooking faster.

A third means used to determine doneness of meats is that of inserting needles, withdrawing them and passing the needle over one's cheek or other sensitive skin area. This method visibly has its limits of accuracy, since no two people would probably agree upon the doneness and who would be able to say which one was more correct? It is not a very sanitary method either.

The fourth method is that of pushing on the roast with a fork or with one's finger. The use of fingers is usually done for steaks and chops. This method, like the needle method, is rather inaccurate. Doneness is "determined" by the relative firmness of the area depressed, (the more done it is, the firmer the meat) and experience.

The fifth and last method is pricking the meat with a fork to see how much juice is released and the color of the escaping juice. The problem is that this makes the product drier by permitting the juices to escape.

One additional consideration that we must keep in mind when cooking meat is that of carry-over cooking. Even after a product has been removed from the oven, heat is still being transferred to the center of the product by conduction. This is known as carry-over cooking. Especially with beef, people have preferences as to how well done they like their meat. Even when a roast is judged to be rare when removed from the oven, this additional cooking may produce meat that will be closer to medium when served. This is an excellent example of when a meat thermometer is very useful. To achieve a rare roast (140° F.), one would remove the roast from the oven when the thermometer reads $115\text{-}125^{\circ}$ F. The roast is allowed to set and, when served, the internal temperature will be that of a rare roast. (For medium remove roast from $135\text{-}145^{\circ}$ F.; for well-done $155\text{-}165^{\circ}$ F.)

One of the most difficult tasks, and possibly the most important, is that of carving meat. A good carving job results in portions of equal size (portion control) and serves to eliminate excessive waste. A general knowledge of anatomy of the animal and the correct tools kept in perfect condition are the first steps to proper carving. A few points you should keep in mind when carving are: (1) Cleanliness; carve on a cutting board that is clean. Have yourself and your equipment spotlessly clean. Have enough pans ready before you to complete the job. Use a separate container for scraps and keep the cutting board reasonably dry. (2) Proper equipment: use the correct knives that are razor sharp and above all, learn to use a meat fork. Always cut across the grain of the meat and away from yourself when possible. Stack cut portions in such a manner that they can be easily removed on the serving line without breaking or crumbling.

Use of a slicing machine eliminates many problems of carving, but the meat must be boned first.

WORKBOOK EXERCISES

Lesson 9

I. Meat Section

A. GENERAL MEAT COOKERY
AND
B. ROASTING MEAT

1. From a "Beef Chart" list four cuts of beef that can be cooked by dry heat methods and four cuts that should be prepared using moist heat methods. Chart can be found in the University library food production texts or in some cookbooks.

Dry Heat	Moist Heat
A.	A.
B.	B.
C.	C.
D.	D.

2. Explain the effects of a high temperature used for roasting (475° F).

3. Explain "carry-over cooking."

4. A. Define MIREPOIX.

B. What purpose does a MIREPOIX serve?

C. When is a MIREPOIX applied to a roast? Why?

5. Which cooks faster, a boned rolled roast or a bone-in roast of the same size? Why?

KEY TO WORKBOOK EXERCISES

Lesson 9

I. Meat Section

SECTIONS A AND B

1.

Dry	Moist
A. Any cut from	A. Any cut from Flank Steak,
B. Rib, Short Loin,	B. Round, Chuck, Short Plate,
C. or Sirloin (and	C. Fore Shank, Brisket, or
D. Ground Beef)	D. Knuckle

2. Larger cooking loss, drier product.

3. Once a product is removed from the oven, cooking does not stop but continues because heat is being conducted to the center of the product

4. A. Combination of chopped celery, onion, and carrots

   B. Add flavor to a roast and drippings

   C. Near the end of the roasting period--just long enough to cook the vegetables. If it were added too soon, the vegetables would burn.

5. Bone in; the bone conducts heat and cooking occurs faster than if no bone were present.

C. Broiling Meats

Broiling, another dry heat method of cooking, is a process which mostly involves radiant heat (a minimal amount of broiling involves convection). Like roasting, the broiling process is recommended for tender cuts of meat.

Depending upon the type of equipment in the establishment, broiling may be accomplished by heat released from gas or electric elements or from charcoal. Although flames from other fuels such as gasoline, kerosene, alcohol, or lighter fluid would serve to broil a meat product, the flavor of these flames remains on the meat and leaves a foul taste. Use of some of these fuels for cooking would also be dangerous to a person's health.

There are many factors that one should consider when determining the desirable temperature for broiling a piece of meat. The kind of meat, the cut of meat, its thickness, the size, the temperature of the meat at the time when cooking is to begin, the amount of fat in the meat, and the intensity of the heat are all things that should be kept in mind.

Generally, a thicker piece of meat requires more broiling time than a thinner one, a frozen or near-frozen cut requires more time than a cut closer to being fully thawed; a more lean piece of meat requires more time than one with good fat distribution, depending on the thickness.

When dealing specifically with frozen meats, the following things should be kept in mind: (1) frozen steaks or chops can be broiled without being thawed. Keep temperature lower--until the meat has thawed, then raise the temperature. (The broiler rack may also be lowered at first, then raised as cooking progresses.) (2) if the thickness of a steak or chop is greater than one and one-half inches, these meats should be almost completely thawed before broiling to ensure that cooking takes place throughout (or use process described in #1 above). (3) because the interior of a frozen steak delays in cooking during the broiling process, it is easier to cook any steak (and especially thicker ones) to a rare state of doneness. The exterior browns faster and the interior remains rare.

To prepare a piece of meat for broiling, dip it into, or brush on, vegetable oil. Salt, pepper, garlic, paprika, and other seasonings may be added to this oil or sprinkled directly on the meat after the oil has been applied. The oil serves two purposes: it prevents the meat from sticking to the hot grid and it increases the surface temperature of the meat which causes browning. (Butter should not be used in place of oil since the smoke point of butter is too low for the heat of the broiler.)

The meat is placed on the grid and is turned to allow cooking to occur on both sides. The number of times a piece of meat is turned varies, depending upon the thickness of the meat. A thinner cut may only be turned once; a thick piece may be turned a number of times. Turning also produces x's on the surface of the meat (grid marks), which enhances its appearance.

Care should be taken when turning any item on the broiler. Tongs or a spatula should be used rather than a fork since the fork would puncture the meat and would allow juices to escape, thus causing a dry finished product. A fork may be used if care is taken only to pierce the fat covering of the meat.

When broiling steaks, the outside fat covering is scored (slit with a knife) about every inch. This prevents the fat from curling up as it dries; the steak will remain flat against the grids and will cook evenly. When scoring a steak, cut completely through the fat without cutting into the meat.

One of the most difficult things to determine is the doneness of a broiled item. This is almost always done by touch (firmness of the meat indicates degree of doneness) and by visual inspection. When a blunt instrument is pressed against the surface, the color of the escaping juices is the second indication of doneness. (The redder the juice, the rarer the meat.) It is not really worthwhile to use a meat thermometer when testing a broiled product for doneness since the meat is usually too thin to get an accurate reading and such a short period of cooking time and frequency of turning the meat does not justify going to so much trouble. Good judgment in this case is a direct result of experience and practice.

Steaks and chops that are broiled should be removed from the heat slightly before they reach the requested stage of doneness. This allows for the carry-over cooking that occurs once the meat is removed from the broiler.

Sirloin, porterhouse, T-bone, strip, Delmonico (rib eye), rib, club, and tenderloin (filet) are beef steaks that are tender enough for broiling (if the quality of beef they come from is high). Lamb chops and lamb steaks can be broiled, depending upon the amount of fat in them. Ground meats that contain 15 to 25% fat broil well. Fat meats and bacon can be broiled, as can ham steaks. Broiling of pork chops and spareribs is not recommended unless previously cooked to a well done state (finishing by broiling). This process may be reversed so that the chops and ribs are first broiled and finished in the oven.

Two variations of broiling are barbecuing and pan broiling. Barbecuing can be broiling with basting a product while it broils. Pan broiling is done in a skillet or shallow, flat pan. The fat from the skillet should be removed (poured off) as it accumulates to prevent frying from occurring. This is very difficult to do, and therefore most pan broiling results in a fried product. Although the appearance of a pan broiled product differs from one that has been broiled in the normal way, technically, the method is a form of actual broiling.

D. Cooking with Moist Heat (Meat)

Moist heat methods of cooking are generally used with less tender cuts of meat. The moist heat methods apply liquid through either simmering, steaming, frying, boiling, stewing, or poaching. Water, wine, tomatoes, and a variety of other products with liquid content may be added to tenderize meats. The one factor to remember when cooking meats in liquids is to keep the liquid at a temperature below boiling. These simmering temperatures (about 180° F.) serve to tenderize meats; boiling temperatures toughen the product.

Braising is one method of moist heat cookery. The meat is browned in a small amount of fat and cooked slowly on top of the stove with a small amount of water added. (The browning process may not be employed in all braising situations--when a fricasée is made--a blond stew--no browning is involved. The meat is cooked only in its own juices to limit browning.) Pot roasts, fricassées, and Swiss steaks are all prepared by braising. Meats used in braising may be rolled in seasoned flour and then browned in fat, though this is not always done. (Usually another cooking process is employed after braising to finish cooking the product.)

The process called sauteeing is merely the procedure used to brown meats in oleo, oil, butter, or shortening. Although there is usually an additional finishing process involved when meat is first sauteed, it could be the only process used in cooking meats. This, however, would only be recommended with small pieces of meat, since larger ones would not cook thoroughly under these conditions without burning on the surface.

Another moist heat method for cooking meats is steaming. Steaming involves adding water or other liquid to the product and covering the container so that steam forms. Pressure cooking is a variation of steaming and differs only in the fact that the product is cooked under pressure.

Since there are many variations in cooking times and temperatures in the above mentioned moist heat methods, we will not discuss these areas further. The recipes for making products by these methods are very specific about cooking times and temperatures; it is to our advantage not to get more detailed since each case would produce exceptions.

E. Cooking Stews

The stewing process is one that is closely related to simmering. It involves cooking meats and vegetables in water of about 185° F. (a simmering temperature). The meat used for stewing is generally tough. It is usually cut into small pieces before cooking. These pieces are frequently floured and browned in a small amount of fat. A blond stew requires no browning of the meat. Water or other liquid is then added to the browned meat to sufficiently cover it. (The amount of liquid added is greater than that used in braising and simmering.) About 30 minutes before the meat is fully cooked, vegetables are added. If they are added at the beginning of the cooking period they would be overcooked and would fall apart.

When the meat and vegetables are both fully cooked, the liquid is thickened (usually with flour or corn starch) to make a light gravy. Care should be taken to add the thickening agent as recommended in Lesson 6 on Gravies to avoid lumps in the liquid portion of the stew.

Additional seasonings may be added to the stew at this time. The stew should be transferred from the cooking utensil (pot or steam jacketed kettle) to another pot or steam table pan and held (usually in a bain marie) until serving.

WORKBOOK EXERCISES

Lesson 9

C. BROILING MEATS

1. What characteristics are desirable in a cut of meat that is to be broiled?

2. List 3 beef items that may be broiled.

   A.
   B.
   C.

3. You are given a frozen 2" T-bone steak to be broiled to a well-done state as quickly as possible. Describe in detail the steps you would go through and the considerations of temperature you would make.

4. Name two variations of broiling process and describe how they are different from standard broiling procedures.

   A.

   B.

WORKBOOK EXERCISES

Lesson 9

D. COOKING WITH MOIST HEAT

1. Explain the difference between braising and sauteeing.

2. What is a fricassee?

3. What effects would an increase of 100° F. produce in regard to how long the product would be cooked and quality of the finished product (shrinkage, loss, nutritional value, taste)?

4. Why is shortening preferable to butter when used for browning meats?

E. COOKING STEWS

1. What is the difference between stewing and braising?

2. Define RAGOUT. (Consult an outside reference.)

3. Consult with the meat cook in your establishment (or a text book) to determine the basic difference between browned, blonde, and white stews.

KEY TO WORKBOOK EXERCISES

Lesson 9

SECTION C.

1. Tenderness, good fat distribution

2. A. Any cut from Rib, Shortloin, or Sirloin

   B. Same as A

   C. Same as A

3. Temperature should be kept extremely low, especially until steak is thawed, then raised slightly.

4. A. barbecuing--basting product with barbecue sauce while broiling

   B. pan broiling--use of a skillet and pouring off fat as it accumulates to prevent frying

SECTION D.

1. Braising is cooking in a small amount of liquid (about 1/3 of the meat is covered with water); sauteeing is frying food in shallow fat in a frying pan.

2. a blonde stew--no browning of the meat has taken place

3. A 100° F. increase would probably put the temperature well above boiling. This toughens the product, increases shrinkage, decreases flavor, and may lower nutritional value.

4. Shortening is used because it has a higher smoke point than butter.

SECTION E.

1. The stewing process involves using more liquid (the product is fully covered) in cooking than braising (1/3 of the product is covered).

2. Ragout--well-seasoned meat and vegetables cooked in a thick sauce (a form of stew).

3. They involve browning of the meat to various degrees.

H̄FS SPECIFICS: LESSON 9

(Since both Lessons 9 and 10 deal with the activities of the meat cooks in preparing entree items, we will deal with the responsibilities of the H̄FS MEAT CUTTER - BROILERMAN in this lesson. The layout of the H̄FS Kitchen, Figure 1.2--next page--will show you the placement of both work areas.)

When the H̄FS Restaurant began its business (about 10 years ago), there was a definite advantage to buying meats in large quantities and cutting them on the premises. It was not unusual to purchase a side of beef or a whole forequarter or hindquarter and have the meat cutter butcher it. In this way, the H̄FS was able to ensure the quality of its steaks and roasts and could have them cut to desired specifications of size. In the long run, such a process would generally be less expensive than ordering individual steaks and the like.

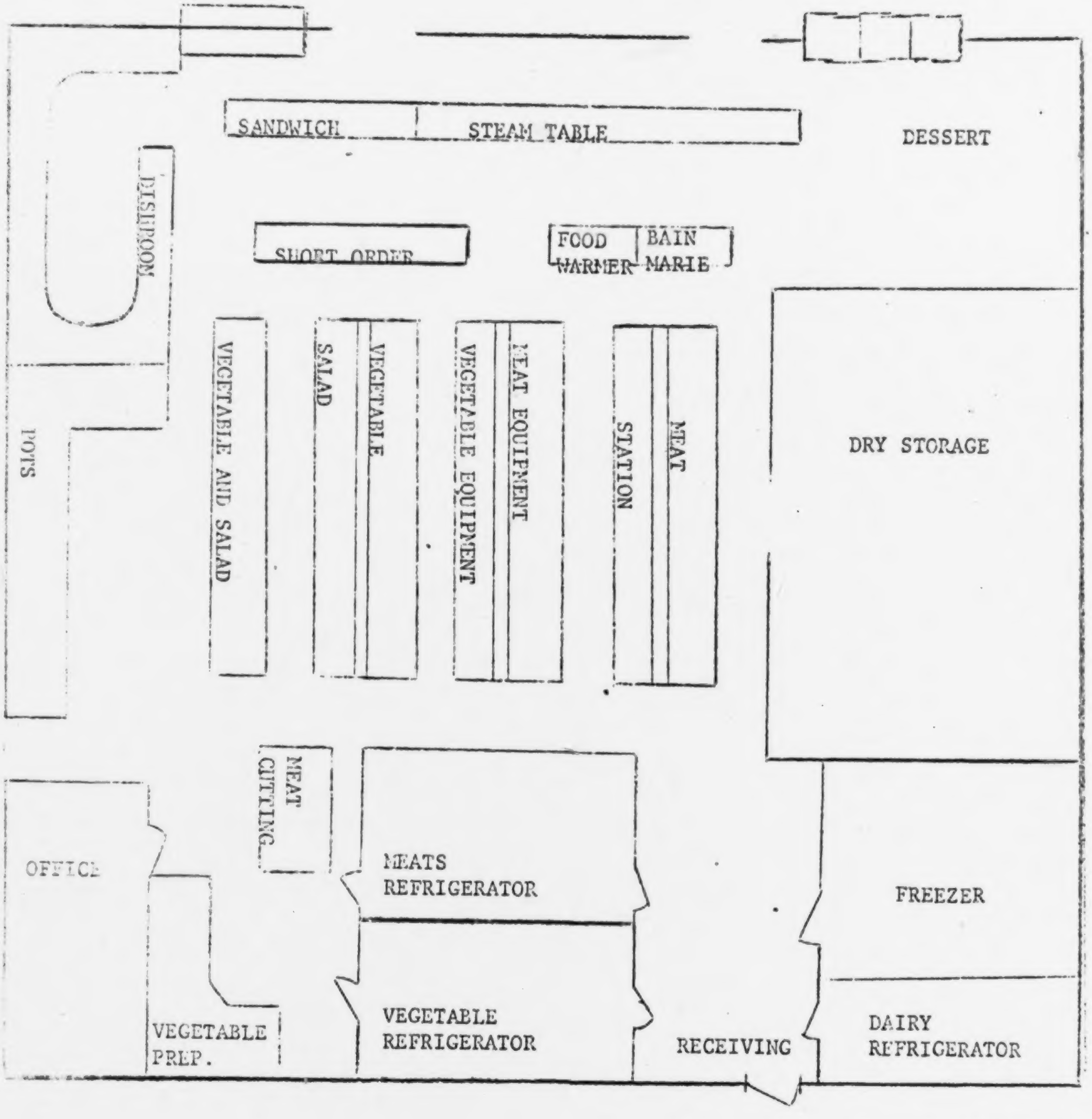
In the present day situation, however, there is very little meat cutting done in the H̄FS. There are many reasons for this. First of all, with the great increase in wages, it hardly pays the H̄FS to hire a full time meat cutter when it can purchase high quality meats already cut at the same or even a lower price. In addition to the money paid to the meat cutter, the H̄FS had to purchase many large pieces of equipment, and the cost of operating this equipment was also great. The sum of these these three items plus the cost of purchasing the meat almost always exceeded the price of pre-cut meats. As a result, the H̄FS decided to sell all of its large meat cutting equipment except for the meat grinder. (See Lesson 10, Figure 8.) This piece of equipment is still used to grind meat for hamburgers, meat loaf, ham loaf, and other items served in the H̄FS. Perhaps in the future, the H̄FS may purchase most of these items in the form of convenience products which will enable them to sell the meat grinder.

Besides using the meat grinder, the meat cutter may also be responsible for boning chicken breasts, boning roasts before or after cooking, skinning and portioning tenderloins, carving and portioning roasts, rolling and tying roasts, cutting and portioning various types of steaks (or chops), cutting pockets in pork chops for stuffing, carving cooked turkeys, and cutting up chickens into their parts. The meat cutter is also responsible for keeping the equipment and utensils in good condition. This includes sharpening knives and employing proper techniques of sanitation.

Because the meat cutter's job does not involve enough work for it to be a full-time position, it is combined with a second part-time position--that of a broilerman. The broilerman works only during the evening meal since his meat cutting activities keep him occupied during part of the morning and early afternoon. He uses the broiler shown in Figure 7 (Sandwich Station) to broil steaks, chops, and other entree items on the $\bar{H}$FS dinner menu. (Also see Figure 1.2.) All of these items are made to order and are broiled to the customer's specifications.

Before the rush period begins, the broilerman consults with the meat cooks to find out which items are on the menu for that meal that require broiling. Since these items have been previously portioned, they can be removed from the meat station and placed in the refrigerator in the short order station. When one of these items is requested, the waitress informs the broilerman and he prepares the order. Plates for serving are stored below the sandwich work table, thus making them easy for the broilerman to reach. He may be required to garnish finished entrees with a variety of garnishes that have been prepared by another kitchen worker. The completed entree is placed on the raised shelf above the sandwich work table where the waitress picks it up and serves it to the customer.

As you can see from this description, the $\bar{H}$FS saves the meat cooks steps and time by placing the main broiler in the sandwich area. In this way, the orders are prepared and served quickly without wasted steps by the waitress or broilerman. This allows the products to be of the highest quality when they are served to the $\bar{H}$FS guests.


SANDWICH
STEAM TABLE
DESSERT
DISHROOM
SHORT ORDER
FOOD WARMER
BAIN MARIE
POTS
VEGETABLE AND SALAD
SALAD
VEGETABLE
VEGETABLE EQUIPMENT
MEAT EQUIPMENT
STATION
MEAT
DRY STORAGE
MEAT CUTTING
OFFICE
MEATS REFRIGERATOR
FREEZER
VEGETABLE PREP.
VEGETABLE REFRIGERATOR
RECEIVING
DAIRY REFRIGERATOR

(NOT TO SCALE!)

FIGURE 1.2: HFS KITCHEN

5/30/72 MER 2254: SW

HFS EXERCISES

1. When a large roast is prepared in your establishment, is it frozen or thawed when cooking begins? Why?

2. Name and describe the type of oven(s) used for roasting where you work.

3. A. List the steps your cook follows when preparing a roast for the oven.

   B. Does this differ from the procedure described in the lesson?

4. A. How is the doneness of a roast determined where you work?

   B. What is the most accurate way to determine doneness?

5. Is the idea of "carry-over cooking" kept in mind when your cook checks a roast for doneness? (If you answered yes, how do you know? If not, what is the effect upon the final product?)

6. What is done with the drippings from a roast where you work?

7. What seasonings are used by the cook in your work place for roasts?

8. Describe the broiling equipment used at your place of employment (gas, electric, or other, fuel used, how to adjust level of heat, etc.).

9. From the meat cook in your establishment or from your instructor, obtain a recipe for a product that uses a moist heat cooking method. Describe how the product is seasoned. What is the procedure used for determining doneness?

10. In your work place, which is used for browning meats on the range, butter or another shortening?

SKILLS

Lesson 9

56. Carve a rib roast
57. Carve a rolled roast
58. Sharpen knives with steel
59. Determine the doneness of a roast using meat thermometer
60. Skin a tenderloin
61. Bone a roast
62. Roll a roast
63. Cut a pocket in a pork chop
64. Turn meat on a broiler
65. Score fat on meat before broiling
66. Adjust the broiler

RELATED SKILLS: #'s 3, 4, 10, 11, 12, 23, 27, 28, 30, 31, 32, 49, 53, 54.

ABOUT LESSON 10

The material in this lesson deals with the principles of poultry cookery and fish and shellfish cookery. After you complete this lesson, you should be able to identify, describe, and perform the activities involved in properly preparing any poultry, fish, or shellfish item. You are also responsible for learning to set up, operate, and clean any piece of equipment that is used by the meat cook.

STUDENT DIRECTIONS

1. Read pages 1-4.
2. Complete the Workbook Exercises on page 5.
3. Check your answers with the Workbook Key on page 6.
4. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #5.
5. Read pages 7-11.
6. Complete the Workbook Exercises on pages 12 and 13.
7. Check your answers with the Workbook Key on page 14.
8. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before going on to #9.
9. Read pages 15-20.
10. Complete the Workbook Exercises on pages 21 and 22.
11. Check your answers with the Workbook Key on page 23.
12. If you have answered questions incorrectly, re-read the appropriate material and re-answer any questions you missed before you go on to #13.
13. Read the HFS SPECIFICS on pages 24 and 25.
14. Answer the HFS questions on pages 26 and 27.
15. On page 28 you will find a list of SKILLS that pertain to this lesson. Follow the procedure for checking off SKILLS.
16. You have now completed Lesson 10 (and this course). If you still feel you do not understand any part of this lesson, consult with a classmate, a fellow worker, the establishment supervisor, or the University instructor about your questions. You will be given a quiz on the material presented in this lesson during the next class seminar.

MEATS II

Lesson 10

F. Frying Meat and Poultry and Deep Fat Frying

Like braising, and unlike pan-broiling, frying and deep fat frying are considered moist cooking methods. In both frying and deep fat frying, foods are prepared by adding additional liquid to them. Food is fried when it is put in or submerged in oil or fat. The fat is at a high enough temperature to brown the surface of the food and cook the interior of the product.

Pan-frying. Generally, tender foods that lack fat of their own are fried. Chicken, veal, fish, and some beef cuts are examples. Usually, thinner pieces of meat are fried, the reason being that due to a high temperature on the surface, the interior of thicker food products will not fully cook before the outside is over-cooked. Frying, however, may be used either as the beginning step in a two-step process or as the second step. For example, breaded pork chops may be fried to brown them and then be finished by roasting in the oven.

Although there is no set temperature for frying, recommended temperatures range from 300° to 385° F. This will vary according to the type of food being fried, the equipment being used, the method used, the degree of doneness to be achieved, the type of fat used, and the amount of fat absorption desired.

All fried foods absorb fat. How much fat is absorbed depends largely upon the food and the temperature of the fat. Cold foods absorb more fat than foods at room temperature. Placing food in cold fat also increases the amount of fat absorbed. The amount of time a food is fried tends to effect the fat absorption; those products being exposed longest retain more fat than others fried for shorter time periods.

Foods that are going to be fried should be as dry as possible. If foods are excessively watery, the heat of the fat turns the water to steam. The steam, in turn, stays in a layer above the food and prevents browning and searing. The food is therefore not fried, but steamed or braised. For this reason, foods may be salted and set aside for water to evaporate from their surfaces before frying. Care should be taken, however, not to add excess salt to the fat, since this tends to break down the fat and make it unsuitable for frying. Foods having high water content also encourage fat breakdown.

Deep fat Frying. Deep fat frying is similar in principle to pan-frying except that in deep fat frying the food is completely submerged in fat. The length of the cooking process, therefore, is shorter since the food item does not have to be turned to finish cooking.

The equipment used for deep fat frying varies, but most establishments have a fryer used only for this purpose. (We will not deal with pressurized deep fat fryers--only the conventional fryers.) Either solid or liquid fat may be used in the deep fat fryer. Generally, hydrogenated fats are selected since they are more stable and do not break down with high heat. Such fats also have a high smoke point (unlike butter). If solid fat is placed in the deep fryer, the temperature should be set at 200° F. to initially melt the fat. It is even better to melt the fat before placing it in the fryer; this prevents the possibility of burning the solid fat which comes in contact with the heating element. Likewise, when the fryer is not in use, the temperature should be kept between 200° F. to 250° F. to prevent breakdown of the fat. Continually high temperatures are another cause of fat breakdown.

Every deep fryer has some type of thermostat or temperature device that regulates the temperature of the fat. Because copper is a good heat conductor, it is often used in the thermostat--only after it has been plated with nickel or chrome. The reason behind this is that copper tends to break down the fat where nickel or other similar elements will not. The same materials are used to coat the frying basket. Neither the basket nor the thermostat should be cleaned with abrasive materials (such as cleanser) since this would result in chipping or removal of the coating.

One additional factor that promotes rapid fat breakdown is the frying of meats and seafoods that have a high fat content. When fried, these products leave behind various substances that encourage fat breakdown. Therefore, when frying a variety of foods in the deep fryer, attempts should be made to fry meats and seafood products last.

Broken down fat can be recognized by a rancid taste (or smell). The fat also forms a heavy, yellow foam and will smoke at normal frying temperatures. It yields products that are darker in color and are more greasy.

When deep frying breaded products, small pieces of breading break off and are left in the fat after the basket has been raised. If such particles are not removed from the fat at least once a day (more often during heavy use), the fat will break down. Fat should be strained and filtered through several layers of cheesecloth or a special filter at least once a day to keep fat breakdown at a minimum. The basket should not be shaken over the fat, nor should food be salted over the fat after frying. This also promotes fat breakdown. As you can see, all possible steps should be taken to prevent fat breakdown since this produces low quality products. Excessive waste of fat in this manner is also expensive for the establishment.

As we have previously stated, there is no real "correct" temperature for frying most food items. Although specific temperatures may be stated in recipes or on charts, the following factors influence these temperatures:

1. Size and shape of the food product--since more time is required to thoroughly cook a thick piece of food than a thinner one, the temperature should be lower to prevent burning.

2. The amount of food being fried in relation to the amount of fat in the fryer--to a certain point (maximum of 1 to 10 ratio) the amount of fat should be about ten times greater than the amount of food being fried. This means that more fat produces more heat to cook the food and there is less drop in temperature when foods absorb heat.

3. The amount of water in the food item--the higher the water content, the longer the period of frying since it takes more heat to raise the temperature of water than any other food product. High water content also breaks down fat.

4. Presence of breading on the food--the breading slows the transfer of heat and it must be fried too. As a result, an overall lower temperature is desirable since a high temperature will burn the breading before the product is thoroughly cooked.

5. Frozen or fresh--a frozen product requires 25% more frying time than the same product that is not frozen.

After food has been deep fried, it is removed from the fryer by lifting the basket, letting excess fat drain from the food above the fryer. Do not shake the basket over the fryer. The basket contents are then emptied into a pan whose bottom is covered with absorbent brown paper. This paper soaks up the additional fat from the fried items before they are served. Deep fat fried products are best when served soon after preparation. Long periods of holding decrease the quality of food items.

The fryer in your establishment may vary from the traditional two-basket model. It is up to you to acquaint yourself with this equipment and its specific functions in your operation.

Specifics in deep fat frying meat and poultry. Keeping in mind what has been stated about the principles of deep fat cookery, we will now deal specifically with the deep frying of meat and poultry.

Unless breaded, meats particularly are not deep fried. The process tends to dry out and toughen even the most tender cuts of meat.

Likewise, poultry that is deep fried is usually cut into pieces (leg, wing, etc.) and breaded before it is fried. This insulates the meat and protects it from drying out. Breading also prevents foods from absorbing an excessive amount of fat.

NOTE: The breading process may vary depending upon the establishment.

(See "poultry cookery"--frying.)

WORKBOOK EXERCISES

Lesson 10

F. FRYING MEAT AND POULTRY AND DEEP FAT FRYING

1. How do pan-frying and pan-broiling differ?

2. A thinner piece of meat should be fried slowly/quickly at a high/low temperature.

3. Why did you answer #2 above as you did?

4. Of what type of metal should the basket on a deep fat fryer be made?

5. Name three things that would encourage fat breakdown.

   A.
   B.
   C.

6. What percent of additional frying time do frozen foods require?________

7. What would be the procedure in determining thermostat accuracy?

8. How often should the thermostat be checked for accuracy?

KEY TO WORKBOOK EXERCISES

Lesson 10

SECTION F

1. In pan-frying the fat from the meat (and added fat) is left in the pan as the product cooks. In pan-broiling, the fat from the meat is removed as it accumulates to prevent frying from taking place.
2. quickly/high
3. Higher heat decreases cooking time and prevents an excess of fat absorption
4. It should be chrome plated
5. High temperatures, certain metals, foods with high fat content, particles of breading left in the fat, salt.
6. 25%
7. Every two weeks or so.
8. Set heat dial on fryer to a specific temperature, see what temperature thermostat registers, and submerge another thermostat or thermometer to check accuracy.

G. Poultry Cookery

Although the term poultry includes any domesticated bird raised for eggs or meat, we will deal only with chicken and turkey. These two forms of poultry may be purchased in a variety of ways: fresh or frozen, dressed or pan-ready and the like.

Poultry is classified in a number of ways generally based upon age and sex. The weight of the bird may vary within these classes and is not usually a means of categorizing poultry. For example, a bird of over ten months of age (either a hen or rooster) may range from four to six pounds (average weight).

The following charts may be good guidelines for classifying chicken and turkey.

CLASS	AGE	AVERAGE WEIGHT	METHOD OF PREPARATION
CHICKEN			
Rock Cornish Hen	5-7 weeks	3/4 - 2 lb.	Bake or barbecue
Broiler	9-12 weeks	3/4 - 2-1/2 lb.	Broil, roast,
Fryer	9-12 weeks	2-1/2 - 3-1/2 lb.	deep fry, barbecue, sautee, or poach.
Roaster	3-5 months	3-1/2 - 5 lb.	Broil, roast, or fricasse
Capon	Under 8 months	3-1/2 - 9 lb.	Roast
Stag	Under 10 months	3-1/2 - 6 lb.	Stew or braise
Stewing hen or foul	Over 10 months	3-1/2 - 6 lb.	Stew or fricasse
Cock or rooster	Over 10 months		Stew or soup
TURKEY			
Fryer-roaster	16 weeks	4 - 9 lb.	Roast, braise,or barbecue
Young hen	5-7 months	8-12; 12 - 18 lb.	Roast
Young Tom	5-7 months	8-12; 12 - 16; 16 - 20 lb.	Roast
Old hen	8-15 months	10 - 20 lb.	Roast or stew
Old Tom	8-15 months	12 - 30 lb.	Roast or stew

The age and size of the bird largely determines the method of cooking chosen. Large birds cannot easily be portioned for serving before cooking and are usually roasted or simmered, then portioned. Smaller birds can easily be halved, quarter-ed, or sectioned into parts before being broiled, fricasseed, deep fried, or poached.

Since poultry is highly perishable it is desirable to either freeze (below 0° F.) or refrigerate it at 34-36° F. Once poultry has been defrosted, it should be used as quickly as possible and NEVER refrozen. Defrosting encourages bacteria and spoiling agents to multiply. (Care should be taken not to break the skin before storing since this protects the flesh from the harmful bacteria.)

As you can see from the chart, young, tender birds are cooked mostly by dry heat methods and older, tougher birds by moist heat methods. The age of the bird can largely be determined by the flexibility of the breastbone. The younger the bird, the more flexible the breastbone. This becomes hard and brittle with age. When birds are bought frozen, halved, or in pieces, the name classification determines the age of the bird (i.e., "stewing chicken.")

ROASTING

The roasting process is one of the most popular methods of cooking poultry. The white meat of poultry is generally drier than the dark meat and should, therefore, be prevented from drying out during the cooking process. One way to assure a moist product is to place the breast (white meat) at the bottom of the pan. (A roasting rack is used to elevate the bird to prevent frying from taking place at the bottom of the pan.) This way, the fat covering on the back of the bird melts during the cooking process and bastes the meat, thus making it more moist. The problem with this method is that the desired browning of the breast is not achieved. If the meat is portioned after roasting, this is really unimportant, but when the whole bird or parts are served intact, more browning is necessary. This can be facilitated by turning the bird breast up for the last 15 minutes of roasting and brushing on a coating of three parts honey to one part soy sauce.

If the bird is to be cooked the entire time breast up, it is necessary to frequently baste the bird with drippings. Basting can be lessened by covering the breast with a double folded piece of cheesecloth and basting only two or three times during the roasting period. The cloth should be removed 20 or 30 minutes before it is finished to allow adequate browning to occur.

Cooking a bird in aluminum foil or in plastic wrap is not recommended since the juices are kept inside the wrapping. This causes a steamed product rather than a roasted one; the result is a pot-roasted flavor that may be less desirable.

The normal roasting temperature for poultry is usually suggested in a recipe. It is possible to minimize shrinkage by roasting at 250° F. This lengthens the cooking period, however, and should be accounted for. It may also produce a dry product if the cooking period is very long. Cooking at temperatures above 350° F. tends to lessen roasting time but produces a dried, toughened product.

The best way to determine doneness of poultry is to use a meat thermometer. It should be placed in the thickest part of the thigh or breast away from the bone. The temperature should be 185-195° F. (or less for carry-over cooking--about 165° F. If the bird is stuffed, the thermometer may be placed in the center of the stuffing. This should reach a temperature of 165°.

In large quantity food operations, poultry is not stuffed. The dressing is prepared separately, in large pans to shorten cooking time and simplify the work. After it is prepared, the stuffing is portioned and served with slices of poultry or poultry parts.

If the roasted poultry is to be held for any length of time for serving, it should be covered either with a moist cloth or with aluminum foil to prevent drying and kept in a slow oven or a heating cabinet (food warmer).

BROILING

Since broiling is a dry heat cooking method, only young, tender poultry should be prepared in this way. The poultry is usually cut into parts or prepared by removing the backbone and partially cutting the wing and leg joints before broiling. Both methods cause the bird to lie flat under the broiler, thus allowing equal heat penetration to reach all parts.

The bird is dipped into a mixture of oil, salt, white pepper, and paprika and is placed on a pre-heated grid over or under the broiler. Depending on the thickness of the poultry and the intensity of the heat, the grid is adjusted so that the meat is four to six inches from the heat sources. If it is placed too close the skin will burn before the meat is thoroughly cooked inside. It should only be turned once.

If the bird is not dipped in oil prior to being placed under the broiler, it may be basted with clarified butter with paprika added (or some variation of this). It should be basted every four to five minutes. Since this method becomes terribly messy and time consuming, it is not standard procedure.

A popular variation of broiled chicken is barbecued chicken. This process involves broiling while basting with a specially prepared barbecue sauce. The poultry should be placed seven to nine inches from the heat source to allow slow cooking. The bird should be turned frequently to permit even cooking and browning (frequently done on a rotisserie).

FRYING

Because of the nature of the frying process regarding its toughening effect on meat, young, tender chickens (1-1/2 - 3-1/2 lbs.) as "fryers" or "roasters" are usually the only poultry products fried. Chicken may be pan fried, deep fried, or oven fried.

Pan frying involves dredging parts of the chicken (or flouring it) in seasoned flour (flour, salt, and paprika). The parts are placed in a skillet containing about one-half inch of cooking fat and are evenly browned and cooked. This may be the only method of cooking used, or the chicken may be finished in a moderate (350° F.) oven for ten minutes. The finishing process improves the final product. (The pan is usually covered for the first 15 minutes of the pan frying process and the cover is removed for the last five minutes or so to crisp the chicken.)

The deep frying process involves frying chicken in a large amount of fat after it has been breaded or batter-dipped. Breading consists of dredging the dry pieces of chicken in seasoned flour, dipping them in an egg and/or milk solution, and rolling them in fine crumbs. This coating must set (about 15 minutes on a rack) so that it adheres to the chicken in the deep frying process. Southern fried chicken is a popular breaded product.

Batter dipping merely consists of dipping the pieces in a batter, letting the excess drain off, and putting them in the fat. An example of a batter-dipped product is Maryland style chicken.

Deep frying takes relatively little time to thoroughly cook the chicken from its raw state to produce a tasty, golden brown product. The process is preferred over the other frying techniques because of its simplicity and the small amount of food handling it involves.

The oven frying process is one usually used for halves or quarters of chicken. It allows a thoroughly browned product without burning. Floured and breaded chicken is placed on greased baking sheets or pans. Oil is then poured over the surfaces of the single layer of chicken. The pans are placed in a 325-350° oven for approximately one hour.

The above mentioned methods have many variations. Recipes should be consulted for specifics.

Other Moist Heat Methods

Poultry may be cooked by simmering, steaming, or poaching as well as by the methods previously mentioned. See "Cooking with Moist Heat" for more information.

WORKBOOK EXERCISES

Lesson 10

G. POULTRY COOKING

1. You, as the assistant meat cook, are given the assignment of preparing chicken for a banquet of 100 people. The chickens have been delivered and are fryers. From the knowledge you have, choose two possible methods of preparation of the entree and justify your choice in terms of time required for preparation and quality of the finished product (acceptability).

2. Define POULTRY.

3. How are the poultry classes determined?

4. At what temperatures are poultry products refrigerated?___________

   Frozen?____________________

5. How can you tell if a bird is young?

6. A. Why is poultry basted?

   B. How often?

7. In terms of portions per pound, which is more economical, a ten pound or a twenty pound turkey?

8. List two ways to defrost frozen poultry.

A.

B.

9. Why is it not a good idea to roast large, stuffed birds at 250° or lower?

10. Should poultry be carved as soon as it has been removed from the oven? Why or why not?

11. How can a deep brown surface on a bird be achieved?

12. What is the difference between stewing and poaching?

KEY TO WORKBOOK EXERCISES

Lesson 10

SECTION G

1. Possible methods: broil, roast, deep fat fry, barbecue, sautee, or poach. In terms of shortest preparation time and greatest acceptability, broiling and deep fat frying are probably best.
2. Any domesticated bird raised specifically for meat or eggs.
3. 1. AGE
   2. SEX
   3. WEIGHT
4. 34-36° F.; 0° F. or below
5. If the bird has a flexible breastbone, it is young.
6. A. To prevent drying out of the white meat
   B. This greatly depends upon size and age of bird and method of roasting. (Generally every half hour)
7. A 20 pound turkey
8. 1. Place in refrigerator in original wrapping or
   2. Place bird in wrapping under cold running water
9. The lower temperature and long roasting time to produce a fully cooked product encourage growth of harmful bacteria and micro-organisms in the stuffing.
10. No; it should be allowed to stand for about 30 minutes before carving to let the juices "set" and be re-absorbed by the muscles. This makes the meat firmer, thus making carving easier.
11. By brushing the surface of the bird with a mixture of three parts honey to one part soy sauce before the last 15 minutes roasting.
12. Stewing involves use of more water than does poaching.

H. FISH AND SHELLFISH COOKERY

We have previously dealt with determining methods of cooking meat and poultry, a decision which is largely based upon the tenderness of the flesh. Choosing methods by which to cook fish differs in that the fat content of the fish is the decisive factor. Unlike meat, there is little connective tissue in fish. This is why there is a difference in how to determine cooking methods. Generally, fish having a low fat content are deep fried, poached, or baked in a sauce. These with a high fat content are prepared by broiling, baking or pan frying.

The following is a list of some of the most commonly eaten fish and their fat contents:

Bass, giant sea	3% (low)
Bass, sea	3% (low)
Caviar	15% (high)
Cod	1.5% (very low)
Flounder	.5% (very low)
Haddock	5% (low)
Halibut	.8% (very low)
Mackerel	8% (moderate)
Perch	1.2% (very low)
Salmon	16% (high)
Shad	9.5% (moderate)
Smelt	4% (low)
Sturgeon	4.5% (low)
Swordfish	3.8% (low)
Trout	2% (very low)
Tuna	8% (moderate)

SHELLFISH

Clams	1.4% (very low)
Crabs	2.5% (very low)
Lobster	1.9% (very low)
Oyster	2.0% (very low)
Scallops	1.3% (very low)
Shrimp	1.5% (very low)

In the quantity food business, fish may be purchased in these forms: whole, fillets (side cuts), sticks (fillets that have been portioned), and steaks (cross-section). It may be fresh or frozen.

Because of its nature, fish is a highly perishable food. If it is not stored properly, it spoils very quickly. Fresh fish should be refrigerated at temperatures below 40° F., preferably at 32-36° F. It should be wrapped in a moisture-proof wrapping to hold its moisture in and to prevent it from absorbing and releasing off-flavors. Fish that is exposed to air spoils quickly.

Frozen fish should be wrapped like fresh fish if it is not so packaged upon arrival and kept at temperatures below 0° F. It should not be thawed until just before its use.

Frozen fish is usually thawed before cooking although it may be cooked from a frozen state if adequate time is allowed. There are two methods acceptable for thawing frozen fish. One is to thaw it in the refrigerator at 37° to 40° F. (about eight hours, depending upon size of the container). This method is preferred over the second method. The second method involves leaving the fish in its wrapping and placing it under COLD running water until thawed. Hot water should never be used to force-thaw fish nor should fish be thawed at room temperature. Both of these methods encourage the growth of undesirable bacteria that lowers the quality of the product. They cause loss of nutrients and loss of flavor. They also cause a loss of moisture that results in a drier product.

BAKING FISH

Fish having high or moderate fat content are chosen for baking and broiling. Such fish as salmon and mackerel bake well. The whole fish, fish steaks, or the fillets (sides of the fish) may be baked. A whole fish may be stuffed before baking although this is not necessary.

Before baking the fish is salted, peppered, and sprinkled with lemon juice. It may be buttered and sprinkled with paprika if desired. The fish is then placed in a greased pan and baked in a 325-350° oven. When baking a fish having low fat content, a strip of bacon may be placed on the flesh to add fat during baking. Fish is thoroughly baked when the flesh flakes away when pierced with a fork. Do not overcook since this causes a dry, tough product.

BROILING FISH

To broil fish, first grease the broiler rack and place the fish on it skin side down. If the fish has no skin, (as in fillets) it does not matter which side is placed down. Next, brush the surface of the fish with a mixture of clarified butter (or oil) and lemon juice and adjust the rack so that the fish is five to seven inches from the heat source. Broil from six to nine minutes depending on the thickness of the fish. Turn the fish over, brush the other side with the butter mixture and broil until done. A double rack that encloses the fish from both sides allows the fish to be turned without breaking.

When broiling a thin fish, place it closer to the heat source than you would place a thicker fish. Faster broiling will occur before the fish dries out as it would if broiled for a longer period of time (if placed further from the heat source). Care must be taken not to overcook the thinner fish. A thicker fish will burn on the surface before becoming thoroughly cooked if placed close to the heat source.

POACHING FISH

When poaching fish, wrap the fish in cheesecloth to keep its shape and prevent it from flaking. This may not be necessary for steaks or fillets. The fish is placed in cold water (large fish) or hot water (for smaller fish) and simmered for 10-15 minutes per pound of fish. The water should be about two inches deep. Care should be taken not to boil the fish since this produces a toughened product.

To produce a more tasty product, a fish stock may be used instead of water. This fish stock (called a court boullion) usually consists of celery, onions, carrots fish stock, lemon juice or vinegar or wine, and a variety of spices.

The poaching process may be done in a pan on the range top or in the oven. Modern steamers also poach products if directions are followed. To prevent overcooking on the bottom, the fish is usually elevated on a greased trivet or rack (the fish is covered by the liquid). The fish is done when it is fork tender and may be served either hot or cold. If served cold, the fish should be left in the court boullion until it cools to allow it to set up. There is less chance of the fish breaking up if cooled in this manner.

PAN FRYING FISH

To produce a tasty product by bringing out the delicate, sweet flavor of fish, clarified butter should be used instead of fat or oil in pan frying fish. (Clarified butter is butter that has been melted so that the solids go to the bottom. The clarified butter remains close to the surface.)

Fish may be breaded with finely ground cracker crumbs as noted in the following process: dip the dry fish into seasoned flour, place in a milk-egg solution (or a variety of other mixtures), and then in the crumbs. Place on a rack for about 15 minutes to dry before frying.

The breaded fish is placed in hot clarified butter and fried until fork tender. It may be necessary to turn the fish once to produce an evenly browned product. (This may either be done on the range or in the oven.)

The pan frying method of cooking fish is especially effective for preparing small whole fish, fish steaks, or fillets. The fish should be cooked until just fork tender and crisp. They are served while hot and are garnished with a lemon wedge and a sprig of parsley. Butter from the pan may be spooned over the fish.

DEEP FAT FRYING FISH

The deep fat frying process is a favorite method of preparing fish sticks, portions of lean fish, and shellfish. The products are breaded or batter dipped the same way as described previously. They are then fried in deep fat at 350° F. until browned nicely. The following are approximate frying times:

Frozen breaded shrimp	4 minutes	Fresh breaded scallops	4 minutes
Fresh breaded shrimp	3 minutes	Breaded fried clams	1 minute
Frozen fish fillets	4 minutes	Breaded fried oysters	5 minutes
Fresh fish fillets	3 minutes	Frozen fish sticks	4 minutes

NOTE: The same precautions should be taken in deep frying fish as in deep frying poultry (see poultry cookery, Deep Fat Frying).

COOKING SHELLFISH

Lobsters, clams, crabs, and oysters may be purchased alive in the shell. If the clams and oysters' shells are open and will not close, this is a sign that they are dead and are not usable. This is apparent in lobsters and crabs if they do not close their claws when claws are forced open.

Clams and oysters may be opened and served raw on the half shell with a cocktail sauce or steamed five to ten minutes until the shells open. Lobsters and crabs are usually cooked by plunging them in boiling salted water for 15 - 20 minutes (depending on the size). Clams and oysters are purchased by the dozen, crabs and lobsters by the pound.

Shucked clams, oysters, and scallops may be purchased in a frozen state ready for cooking. They should be kept frozen until ready for use.

Shrimp may be purchased fresh, pre-cooked, or frozen and are sold according to pre-determined size. These sizes are jumbo, large, medium, and small. The jumbo has 12 to 15 shrimp per pound and the small size may have more than 60 shrimp per pound.

Cooked lobster meat, crab meat, and shrimp are available. These products have been cooked and cleaned, and if they are of the highest quality they will be 100% edible--no waste. If however, the product is not of the highest quality there may be pieces of the shell in the cooked product. This goes to show that you only get what you pay for.

The products previously mentioned are also available in cans. They are of high quality and have no waste. Sizes of cans range from 3-1/2 ounces to five pounds.

Shrimp can be cleaned either before or after they are cooked. The most economical way is to slit the back of the shrimp where the vein (usually black in color) is located and then cook. The shrimp are placed in rapidly boiling salted water; covered and returned to a boil, and simmered for five minutes or until the flesh has lost its shiny appearance. During this simmering process the majority of the vein will fall out, thus lessening the amount of necessary cleaning.

Besides being boiled, lobsters may be cooked by broiling or by steaming. They may be stuffed before broiling. To prevent drying out in the broiling process, the lobster may be split, cleaned, roasted in an oven for about 15 minutes; removed and buttered, and slipped under the broiler for about three minutes to finish the cooking.

WORKBOOK EXERCISES

Lesson 10

H. FISH AND SHELLFISH COOKERY

1. You are given the assignment of deep fat frying Shad for your establishment. Considering your knowledge about varieties of fish and deep fat frying, what would your reaction be? Why?

2. For the following fish, and shellfish, suggest two possible methods of cooking:

   A. Flounder

      1.
      2.

   B. Salmon

      1.

      2.

   C. Oysters

      1.

      2.

   D. Mackerel

      1.

      2.

3. What is clarified butter?

4. Why is a thin fish placed closer to the heat source in broiling than a thicker one?

5. In what ways can fish and shellfish be purchased? (i.e., fresh . . .)

6. How can you tell if clams or oysters are alive in the shell?

7. Describe the process for cooking live lobsters.

8. What are the best methods for cooking fish with a high fat content?

9. Why should fish be wrapped in cheesecloth for poaching?

10. How would you oven-fry fish for a large number of people?

KEY TO WORKBOOK EXERCISES

Lesson 10

SECTION H

1. Shad has a relatively high fat content. If deep fat fried, the finished product would be very greasy and the fat in the fryer would be broken down very quickly because of the release of the fat from the fish.
2. A. Flounder
    1. Sautee, broil, fry, oven fry
    2.

   B. Salmon
    1. Barbecue, bake, poach, oven fry
    2.

   C. Oysters
    1. Stews, sautee, fry, casseroles, raw
    2.

   D. Mackerel
    1. Barbecue
    2. Bake
3. Butter which has been melted and from which the solids have been removed.
4. If the broiling is prolonged, the thin fish dries out. A thicker fish cannot be placed as close to the heat source because it will burn on the surface before cooking inside.
5. fresh, frozen, canned, and pre-cooked
6. Shells must be forced open and will close when force is removed
7. They are shoved head-first into broiling water and simmered until done.
8. Baking, broiling, and pan-frying
9. The cheesecloth keeps the fish's shape and prevents flaking.
10. Fish is breaded, placed on a greased baking sheet and placed in the oven. It is turned once during the process to achieve an evenly browned product. (Some melted fat may be ladled on each portion before oven-frying.)

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H̄FS SPECIFICS : LESSON 10

The meat station in the H̄FS might more descriptively be called the entree station since the cooks here are responsible for the preparation of all the entrees on the luncheon and dinner menus. The H̄FS menu may include pasta, fish, and seafood items in addition to the typical beef, pork, poultry, and other meat products. Because of the wide variety of possible menu items, we will break them down into the specific categories mentioned above in order to further describe the activities of the two H̄FS meat cooks.

Pasta products in the H̄FS are prepared like those in most other establishments. These products may be prepared in the trunnion, the steamer, or in a pot on the range. Although the sauces for these items have previously been prepared from scratch, improved convenience products are being used more frequently. Occasionally, the H̄FS may purchase ready-to-cook frozen entrees which can be cooked in the oven or in the microwave oven. (Care should be taken to use either paper or glass containers for cooking in the microwave since metals do not permit the food to cook.)

The H̄FS prepares a variety of fish and seafood entrees that are cooked in almost any way possible. Fish entrees may be baked, broiled, poached, or fried. They may b served plain or with a variety of sauces. All types of seafood may appear on the H̄FS menu. These items are frequently prepared by deep frying, baking, or broiling. Most of the fish and seafood used in the H̄FS is purchased in the frozen form. Raw fish may have to be thawed and portioned before cooking; the same holds true for raw seafood. On occasion, the H̄FS may purchase frozen seafood that has already been cleaned and breaded. This is ready for deep frying, thus saving the cooks the time involved in cleaning and breading the products as they would do with raw products. (All deep fat frying is done by a pantry worker in the short order station. Meat coo only prepare items for frying by cleaning and breading or batter-dipping them.) Fish and seafood are sometimes used in soups. Seafood is fruquently served a la Newberg.

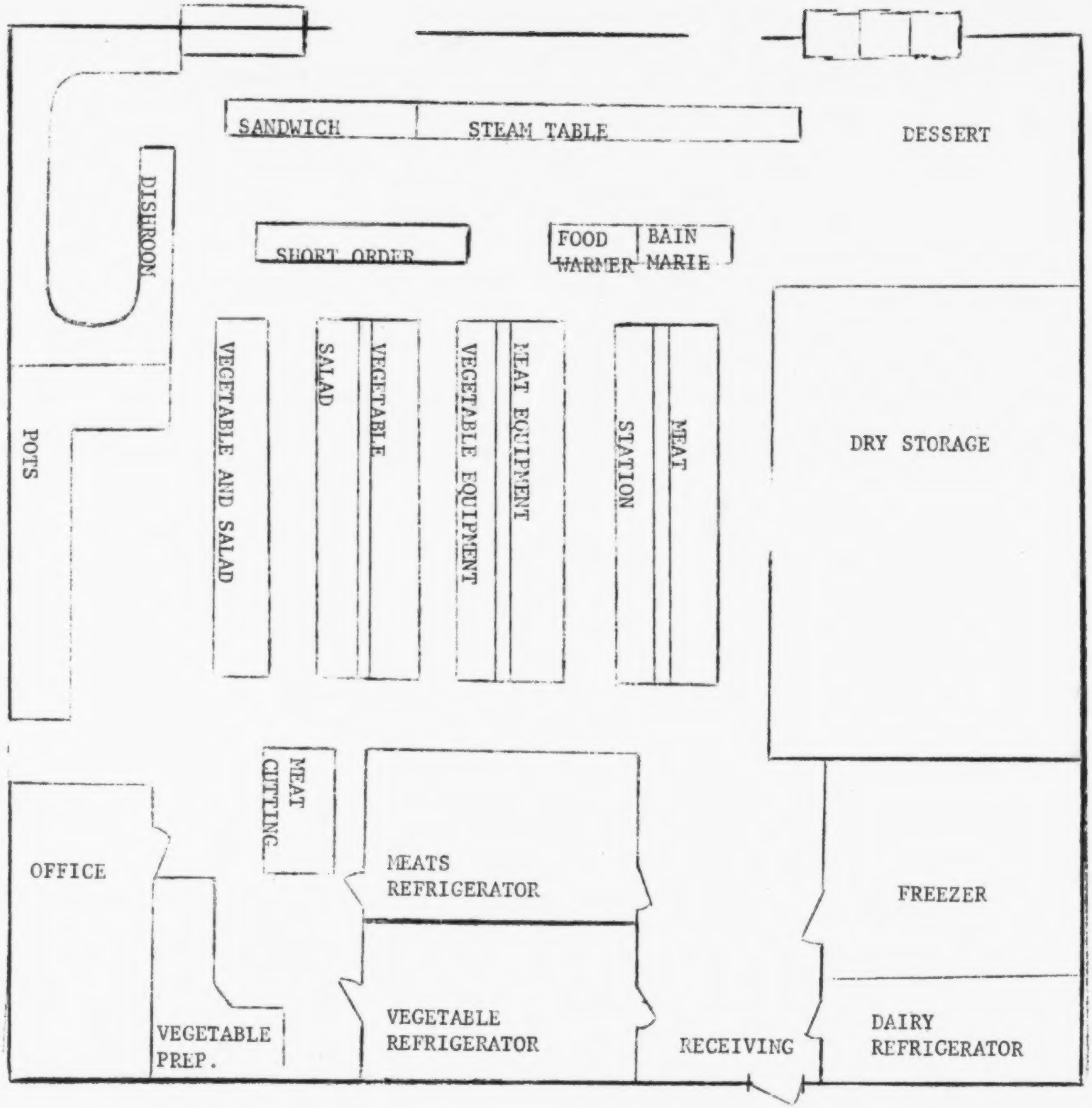
Poultry items are popular in the H̄FS. Chicken is usually purchased fresh, and depending upon what is available, either whole or in parts. It is served in all possible forms. Leftover chicken may be used in making chicken salad for sandwiches or in chicken a la king. The HFS used to rely heavily upon roasting whole turkeys--a long, time-consuming process that yielded much waste after the bird was carved for portioning. Now, the convenience "turkey roll" is most frequently used. This product needs only to be sliced and heated (for hot entrees--or sliced and used in sandwiches). It eliminates almost all the labor involved and yields no waste.

Most steaks, roasts, and other meat items are purchased fresh, cut up (when necessary) by the meat cutter, and frozen when not needed immediately. Although the broilerman is generally responsible for broiling entree items, when he cannot handle all of the orders, one of the meat cooks may assist him by preparing items on the kitchen broiler. (See Figure 8.) Roasts are prepared in the stack ovens (which may be replaced by a convection oven that cooks more quickly due to a fan that forces the hot air around inside the oven), and chops may be baked, fried in the tilt fry pan or broi

On occasion, the meat cooks may prepare soups from scratch, but the trend seems to be toward using convenience products. Up until recently, the HFS was well-known for its home made soups, a reputation that they hope will not change. The soup-making activity also serves the purpose of using up high quality leftovers before they spoil and cost the HFS money.

Looking at the set up of the HFS meat station (Figure 8), you can see that the equipment has been arranged so that those foods that are ready for serving are close to the steam table, food warmer, and bain Marie. Beef roasts are removed from the ovens when the meat thermometer indicates a rare stage of doneness, are placed on the work table until the juices have set, and are sliced (when possible) on the slicer in the meat station. Slices are arranged in steam table pans (after portioning by weight on the portion scale) and are kept in the food warming cabinet until they are needed for serving. Soups and sauces are removed from the trunnions into steam table containers and are placed in the bain Marie (a hot water bath) until they are needed.

You may find that the activities in your establishment are not nearly as elaborate as those of the HFS. Again, do not be critical of your work place or it may not be your work place next week!!!


SANDWICH
STEAM TABLE
DESSERT
DISHROOM
SHORT ORDER
FOOD WARMER
BAIN MARIE
VEGETABLE AND SALAD
SALAD
VEGETABLE
VEGETABLE EQUIPMENT
MEAT EQUIPMENT
STATION
MEAT
DRY STORAGE
POTS
MEAT CUTTING
OFFICE
MEATS REFRIGERATOR
FREEZER
VEGETABLE REFRIGERATOR
RECEIVING
DAIRY REFRIGERATOR
VEGETABLE PREP.

(NOT TO SCALE!)

FIGURE 1.2: HFS KITCHEN

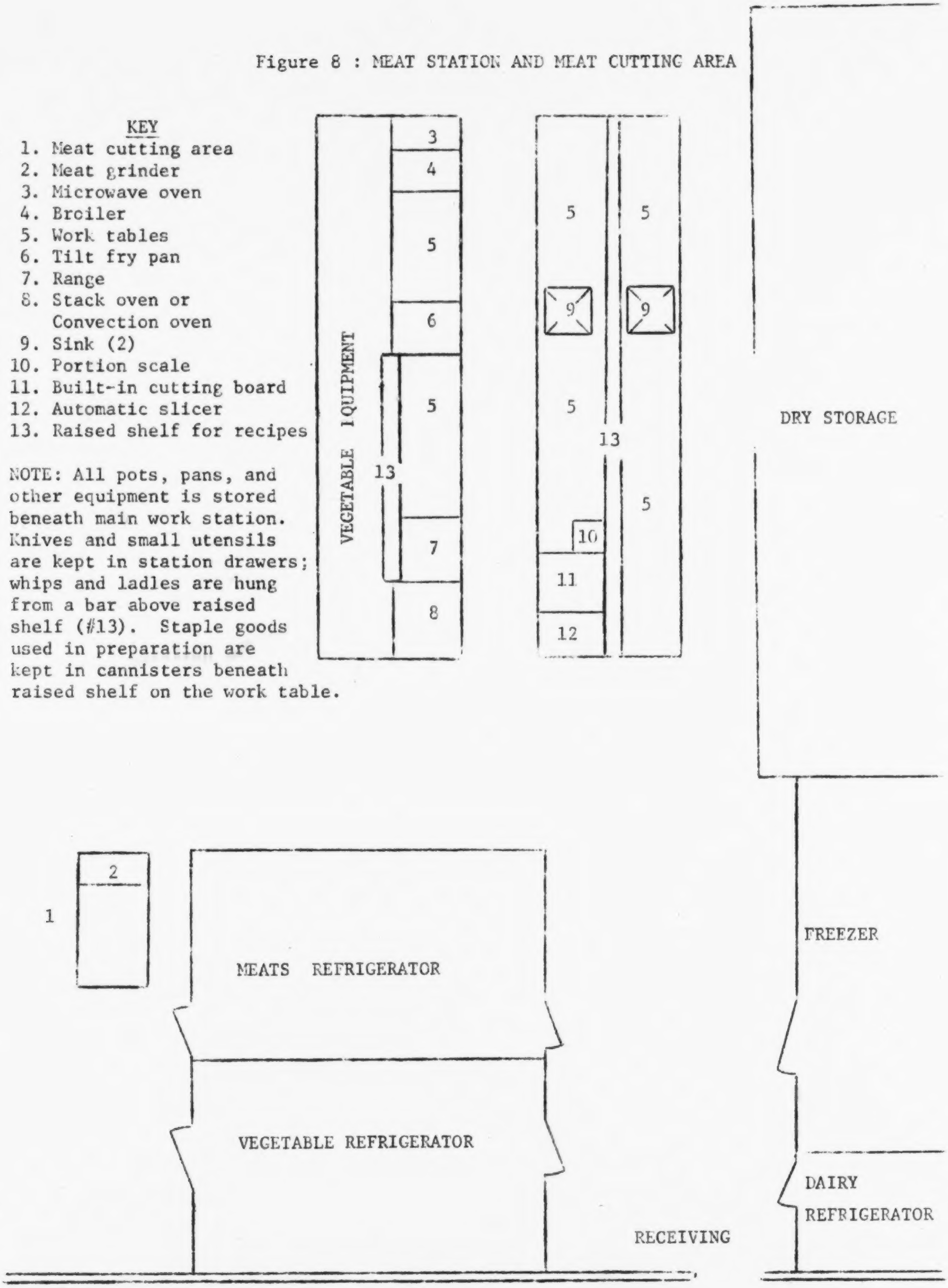
5/30/72 MER 2254: SW

Figure 8 : MEAT STATION AND MEAT CUTTING AREA

KEY

1. Meat cutting area
2. Meat grinder
3. Microwave oven
4. Broiler
5. Work tables
6. Tilt fry pan
7. Range
8. Stack oven or Convection oven
9. Sink (2)
10. Portion scale
11. Built-in cutting board
12. Automatic slicer
13. Raised shelf for recipes

NOTE: All pots, pans, and other equipment is stored beneath main work station. Knives and small utensils are kept in station drawers; whips and ladles are hung from a bar above raised shelf (#13). Staple goods used in preparation are kept in cannisters beneath raised shelf on the work table.


3
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VEGETABLE EQUIPMENT
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11
12
DRY STORAGE
2
1
MEATS REFRIGERATOR
VEGETABLE REFRIGERATOR
FREEZER
DAIRY REFRIGERATOR
RECEIVING

6/14/72 MER 2281: SW

HFS EXERCISES

1. Draw a rough floorplan of the establishment in which you work (this does not have to be to scale).

2. Make a more detailed drawing of the "meat station" in your establishment. Show the placement of the equipment as is done in Figure 8.

3. Investigate the following and record your findings:

   A. What type of fat is used in the deep fat fryer in your establishment?

      Name ______________________________

      Solid or liquid __________________

      Smoke point ______________________

      Saturated or Polyunsaturated ________________________________

   B. How often is the fat filtered?

   C. How often is the thermostat checked?

4. How are meats and/or poultry prepared in your establishment for deep fat frying?

5. List various meat dishes that your establishment prepares that involve pan frying.

6. From the cook in your establishment (or from any other source), learn how a whole turkey is carved and portioned. List the steps below in order from the time the bird is removed from the oven until it is served to the guest.

SKILLS

Lesson 10

67. Bone chicken breasts

68. Cut a whole chicken into parts

69. Determine the doneness of a turkey (2 different skills)

70. Test the doneness of fish

71. Portion fish (raw or cooked)

72. Clean a whole fish

73. Clean shrimp

RELATED SKILLS: #'s 3, 4, 5, 6, 7, 8, 10, 11, 12, 23, 27, 53, 54.

SKILL SECTION

On the following three pages is a list of SKILLS that you must practice and perform for your establishment supervisor. The SKILLS that are appropriate for any particular lesson in HFS 850 are listed at the end of that lesson. It is to your benefit to learn these SKILLS some time during the week that you are reading the lesson material. Since this may not be possible, there is no order that you have to follow in completing the SKILLS. However, by the end of Spring Term, you must have successfully completed ALL of the SKILLS on the list. (Your instructor will give you further details about the procedure you should follow.) If, for any reason, you cannot practice and perform a specific SKILL as it is described, explain this to the University instructor and he will select an approved substitute skill.

Most of the SKILLS have a step by step analysis that will tell you the correct way to practice the SKILL. For these SKILLS, you should practice the steps until you feel you can perform the skill for the establishment supervisor.

There are only a few SKILLS that do not have specific procedures to follow. These may tell you to:

1. Choose any appropriate task and successfully perform it,

OR

2. Consult with the supervisor or another worker and have him teach you and supervise your activity while you are learning that specific task.

NOTE: If a certain SKILL includes a manufacturer's name and a model number, this indicates that the procedure described for performing the skill may differ slightly if another make and model of equipment is used to perform the skill. Because of this, BEFORE YOU OPERATE ANY PIECE OF EQUIPMENT IN YOUR WORK PLACE, HAVE SOMEONE TRAIN YOU TO RUN THAT PIECE OF MACHINERY!!

SKILLS

1. A.* Setting up and operating a dish machine

1. B.* Cleaning and closing up a dish machine

2. Cleaning a grill

3. Cleaning a trunnion or steam kettle

4. Cleaning broiler grids

5.* Cleaning out a deep fat fryer

6.* Setting up a deep fat fryer

7.* Running a deep fat fryer

8.* Straining fat in a deep fat fryer

9. Peeling potatoes

10.* Using a French knife (2)

11. Using a steamer (learn skill and WRITE skill analysis)

12. Reconstituting leftover vegetables

13. Operating an automatic potato peeler

14. Coring an apple (2)

15. Removing core from head lettuce (2)

16. Preparing fresh fruit salad from scratch

17. Cleaning salad greens

18. Storing salad ingredients

19. Preparing tossed green salad

20. Making salad bases

21. Preparing a salad garnish

22. Preparing and unmolding gelatin salads

23.* Adjusting heat in trunnion or steam kettle to SIMMER contents

24. Preparing hot cereal

25. Preparing any food item that uses starch as a thickener

26. Preparing a pasta product

27.* Using a wire whip to stir and blend

28.* Using a ladle

29. Preparing a Hollandaise sauce

30. Making a slurry

31. Making a roux

32. Thickening gravies or stews

33. Whipping egg whites

34. Preparing a custard

35. Preparing a cooked fruit dessert

36. Making a dessert

37. Making a dessert topping or sauce

38.* Slicing a pie

39. Portioning a cake (2)

40.* Using a scoop

41. Cracking an egg without breaking the yolk

42. Separating an egg white from egg yolk

43. Scrambling an egg

44. Frying an egg

45. Poaching an egg

46. Making an omelet

47. Making pancakes

48. Treating a frying pan

49.* Using automatic slicer

50. Spreading butter or mayonnaise

51. Grilling a sandwich

52. Slicing a sandwich

53. Using an automatic chopper-grinder

54. Portioning solid sandwich fillings

55.* Portioning salad-type sandwich fillings

56** Carving a rib roast

57** Carving a rolled roast

58. * Sharpening knives with steel

59. * Determining doneness of a roast using meat thermometer

60. Skinning a tenderloin

61. Boning a roast

62. Rolling a roast

63 Cutting a pocket in a pork chop

64. Turning meat on the broiler

65. Scoring fat before broiling

66. Adjusting the broiler

67. Boning chicken breasts

68. * Cutting whole chicken into parts

69. Determining doneness of a turkey (2)

70. Testing doneness of fish

71. * Portioning fish (raw or cooked)

72. Cleaning a whole fish

73. Cleaning shrimp

* These are CRITICAL skills that you may be called upon to perform for the University instructor in addition to the establishment supervisor.

** You are responsible for either SKILL #56 or SKILL #57; both are CRITICAL.

1.A. Setting up and operating a dishwashing machine (Hobart model C-44)

______A. Shut base valve.

______B. Close drain by throwing lever under machine to "closed" position.

______C. Be sure all screens in bottom are clean and in place.

______D. Open valve under machine on left to begin filling tank.

______E. Shut valve when water is above screens.

______F. Turn on heater.

______G. Make sure curtains are in place and there is additional soap on hand.

______H. Close door in front when temperature has reached the minimum level.

______I. Turn on pump.

______J. Turn on soap indicator.

______K. Turn on water for spray hose.

______L. Fill rack with dishes that have been scraped off and sprayed.

______M. Align rack with the "feet".

______N. Push rack into machine until it catches on hooks.

______O. If there is a slack period, turn pump off. If this period will be long, also turn heater off.

______P. When soap is needed, red light will go on and buzzer will sound.

______Q. Refill soap with dishwashing soap ONLY; continue as above.

1.B. Cleaning and closing up a dishwashing machine.

______A. Remove wash arms and flush them out with running water.

______B. Remove scrap trays and empty; Clean under spray arms.

______C. Remove rinse spray and wash to remove any particles that may clog jets; test by running water through rinse attachment.

______D. Wash down inside of machine with hose; scrub if necessary.

______E. Remove curtains; scrub with brush and detergent; hang to dry.

______F. Open door(s) on machine to allow air to dry inside of machine.

______G. After all machine parts have dried, re-assemble machine for use.

2. Cleaning a grill.

_____A. Turn grill off.
_____B. Rinse down with warm water or soda water.
_____C. Scrape off excess.
_____D. Apply small amount of oil to grill surface.
_____E. Scour with grill stone using circular movements.
_____F. Use a soft rag to wipe off fat and grit.
_____G. Repeat steps D, E, and F if necessary.
_____H. Wipe with a thin coat of oil to lubricate before using grill.
_____I. Wipe down back-splash with soapy water, taking care not to get it on grill surface.
_____J. Empty and wash grease collector and return to grill.

3. Cleaning trunnion or steam jacketed kettle.

_____A. After using trunnion, turn off heat.
_____B. Fill halfway with lukewarm water. If possible, let it set for a while.
_____C. Get cleaning brush and mild detergent.
_____D. Place detergent in water and thoroughly scrub inside and outside of kettle with brush.
_____E. Empty dirty water into a retaining container by tilting kettle.
_____F. Rinse with small amount of clean water and empty.
_____G. Wipe with clean, dry cloth.

4. Cleaning broiler grids.

_____A. Remove grids and place in hot soapy water to soak.
_____B. Using wire brush, scour grids.
_____C. If necessary, use commercial product such as "Easy-off" to remove baked on grease and carbon.
_____D. Rinse thoroughly and allow to dry.
_____E. Replace in broiler.

5. Cleaning out deep fat fryer.

_____A. Remove empty pan, clean it and put aside.

_____B. Turn thermostat control to 100° F. for 30 seconds to burn fat from heating elements.

_____C. With a damp cloth, wipe down top and sides of fryer to remove spilled fat.

_____D. Replace clean pan (step A) in top of fryer.

6. Setting up deep fat fryer. (Electric type--Toastmaster, Model 14C4-A)

_____A. Make sure fryer elements are clean. Raise elements (coils).

_____B. Place empty pan in fryer.

_____C. Add fat (liquid) by slowly pouring it in until "full" line is reached.

_____D. If using solid shortening, put coil into fat and turn temperature control to 200° F. to melt fat.

_____E. When fat is all liquid, increase heat to desired setting and allow fat to heat.

_____F. When temperature has been reached, a light will usually go on indicating that fryer is ready for use.

7. Running deep fat fryer.

_____A. Set up fryer as described in skill #6. Make sure fat is set for proper temperature.

_____B. Remove frying basket from over fat.

_____C. Fill basket with food to be fried. Do not fill over fryer.

_____D. Place full basket in place over fat.

_____E. Lower basket into fat.

_____F. When product is cooked, raise basket.

_____G. Allow excess fat to drip back into well without shaking basket.

_____H. Remove contents of basket to pan containing absorbent paper.

_____I. If necessary, add additional fat to fryer until "full" line is reached before doing additional frying.

8. Straining fat in deep fat fryer. (For Toastmaster Model 14C4-A)

_____A. Turn off machine (Thermostat at 0° F.)

_____B. Pull handle to slide out drawer to expose empty grease pan (beneath fry well.)

_____C. Raise heating elements.

_____D. Place filter bag securely on long end of syphon.

_____E. Place syphon over front edge of fryer in hole provided for it, long end extending into empty pan, short end into fat in fry well.

_____F. Pump syphon until fat begins to flow steadily into lower pan.

_____G. When all fat has been syphoned into lower pan, carefully remove syphon to upper pan.

_____H. Close drawer with full grease pan slowly so as not to spill.

_____I. Remove pan and syphon from fryer well and clean thoroughly.

_____J. Store syphon; replace clean pan in fryer well.

9. Peeling potatoes.

_____A. Wash potatoes with vegetable brush and cold water.

_____B. Using paring knife or swivel peeler, remove peels and eyes as close to surface as possible to prevent waste.

10.1 French knife--chopping.

_____A. Material to be chopped is placed in center of cutting board.

_____B. Index finger is not resting on back of knife; fingers of hand holding knife are all gripping handle.

_____C. Fingertips of opposite hand rest lightly on back of knife near knife tip.

_____D. Knife tip used as a pivot; knife is brought down to chop and handle is raised again in a continuous motion.

10.2 French knife--dicing (celery is a good material to use)

____A. If using celery, several stalks are placed parallel to one another on cutting board.

____B. Fingertips of hand not holding knife hold material being diced.

____C. Point of knife touches board; knife gradually moves toward fingertips of hand holding food product.

____D. Knife is pushed down and forward through material; after one cut has been made, knife handle is raised and brought back to starting position. (If this is done properly, the wrist will move in a circle, counterclockwise.)

11. Using steamer to cook vegetables.

Use either stack steamer or compartment steamer.

Learn the skill and write a step-by-step analysis of this skill.

12. Reconstitute one leftover vegetable for serving. This is optional as far as choice of vegetable and how it is reconstituted. Product should be one of high quality, it should be appetizing, attractive, and well-prepared.

13. Peeling potatoes in automatic peeler.

There is no written checklist for this skill. This skill should be learned by consulting with appropriate worker or supervisor and performed by student only under direct observation of his superior.

14.1 Coring an apple.

____A. Insert corer straight down into center of apple (stem portion facing up) until corer pierces through bottom of apple.

____B. Twist corer around 360°.

____C. Pull out corer, thus removing apple core.

14.2 Coring an apple.

______A. Obtain paring knife

______B. Cut apple in half from end to end.

______C. Cut out seed portion of each half.

______D. Cut on either side of core at a 45° angle to center of apple.

______E. Remove this V-shaped wedge from apple; repeat step D and E for other half of apple.

15.1 Removing core from head lettuce (by cutting)

_____A. Place head of lettuce on cutting board with core facing up.

_____B. Brace head by placing hand on side of head.

_____C. Use a small salad knife or paring knife to cut around the core. (Slant knife toward center.)

_____D. Slice all around the core and use knife to pry it out.

15.2 Removing core from head lettuce (by twisting)

_____A. Grasp head of lettuce with both hands--one on either side with core pointing down.

_____B. Raise head 10-12 inches above cutting board or hard surfaced counter and strike core sharply on surface.

_____C. This should dislodge core so it can be removed by twisting with fingers.

_____D. Repeat striking action if necessary.

16. Preparing fresh fruit salad (from scratch).

_____A. Collect fruits.

_____B. Peel oranges and grapefruit and cut into bite sized pieces.

_____C. Peel and slice bananas into 1/4 inch discs.

_____D. Put sliced bananas among orange and grapefruit pieces to prevent browning.

_____E. Core and section apples after washing. Do not peel.

_____F. Dice apple sections into 1/4 inch pieces.

_____G. Put apple pieces in orange or grapefruit juice (or lemon juice) to prevent browning.

_____H. (If available, use strawberries). Wash and sort to remove any that are spoiled.

_____I. Remove stems and leaves.

_____J. If large, slice.

_____K. Gently mix all fruits together in a bowl by lifting with a large spoon. DO NOT CRUSH!

_____L. Refrigerate until serving time.

17. Cleaning salad greens.

_____A. Remove leaves that are wilted or damaged.

_____B. Remove core of head lettuce.

_____C. Run water through lettuce head.

_____D. Rinse in cold water--DO NOT SOAK.

_____E. Drain greens to remove excess water.

_____F. Tear (or cut for large quantities) into bite sized pieces and refrigerate until serving time.

18. Storing salad ingredients.

_____A. Upon arrival, check delivery for correct amounts and condition of items.

_____B. Store all salad ingredients in walk-in refrigerator (if possible), or other refrigerated unit at 36° until just before use.

_____C. Place items on shelves--not on floor--to insure proper ventilation.

_____D. Keep radishes and carrots in plastic bags prior to use.

_____E. Keep other items in crates or boxes to protect from additional handling and bruising.

_____F. Do not store over long periods of time.

19. Preparing a tossed salad.

_____A. Gather necessary ingredients.

_____B. Wash greens (skill #17) and tear into bite-sized pieces.

_____C. Wash and drain remaining ingredients.

_____D. Peel carrots, cut off ends of carrots and radishes.

_____E. Score cucumbers lengthwise with prongs of fork. Do not peel.

_____F. Slice carrots and radishes by hand or by machine.

_____G. Slice cucumbers by hand or by machine.

_____H. Core tomatoes and cut into wedges.

_____I. Toss carrots and radishes with greens in large bowl to mix thoroughly.

_____J. Portion into individual bowls.

_____K. Garnish with cucumber, tomato wedge, and perhaps onion slice as close to serving time as possible.

_____L. Refrigerate until served.

20. Making salad bases.

_____A. Using cleaned head lettuce, remove individual leaves.

_____B. Shape leaves into a "cup" by tearing along center "seam" to midpoint of leaf and overlapping to edge of leaf.

21. Preparing a salad garnish.

(This requirement may be met by successful completion of any appropriate task chosen by the student.)

22. Unmolding gelatin salads.

_____A. Place mold in shallow pan of warm water so that water comes only to edge of mold.

_____B. Remove when gelatin at edge of mold shows signs of liquefying.

_____C. Place plate on top of mold and invert both so that gelatin is released on to plate.

_____D. If necessary, jar or tap mold to release gelatin.

23. Adjusting heat in trunnion kettle to simmer contents.

_____A. Open valve as far as possible.

_____B. Allow ingredients in kettle to start boiling.

_____C. Turn valve until it is open less than half way.

_____D. If heat is too great and contents are not simmering but boiling, continue to turn valve without completely closing it.

24. Preparing a hot cereal.

_____A. Follow package directions--mix dry ingredients with enough COLD water to form a smooth paste.

_____B. Boil remaining water and add gradually to paste, stirring constantly.

_____C. Cook mixture in a double boiler or steam kettle until it thickens and starchy taste disappears. (A thick gummy product is undesirable.)

_____D. Take care not to boil the cereal or stir it excessively while cooking.

25. Preparing any food item that uses starch as a thickener.

(This requirement may be met by successful completion of any appropriate task chosen by student.)

This skill stresses a smooth consistency of the prepared product and absence of lumping.

26 Preparing a pasta product.

(This requirement may be met by successful completion of any appropriate task chosen by student.)

This skill stresses production of a tender, chewy product and absence of stickiness and mushiness.

27. Using a wire whip to stir and blend.

______A. When using a large whip, and a stationary container, grip handle with one hand, thumb nearest the top of grip.

______B. Place other hand lower than the first using same grip. Hands may be separated.

______C. Use upper hand as a pivot point.

______D. Lower hand guides and gives motion to whip.

______E. Move lower hand in circular fashion to allow whip to reach and combine all ingredients in vessel; or, for a smaller whip and a container that is not stationary, whip is held in one hand while other hand steadies container. How the whip is held is up to the individual.

28. Using a ladle.

______A. Grip ladle by handle, thumb at top of grip, bowl of ladle at bottom.

______B. Dip and sink bowl into bottom of container.

______C. Stir contents with a circular motion and withdraw ladle from container.

______D. Tip ladle handle toward yourself to empty ladle contents.

29. Preparing a Hollandaise sauce (or another sauce thickened with egg yolks)

______A. Heat milk to just below boiling

______B. Blend butter (or margarine) with flour. Stir until smooth to form roux.

______C. Add roux to milk, stirring constantly.

______D. Simmer about five minutes or until slightly thickened.

______E. Add seasoning to sauce; mix well.

______F. While stirring sauce constantly over low heat, add lightly beaten egg yolks in small amounts. Do not allow sauce to boil or simmer

______G. Add remaining butter (or margarine) and lemon juice in small amounts, stirring constantly, until all is added. Beat well after each addition. Do not allow sauce to boil or simmer.

30. Making a slurry.

______A. Add flour (one part) gradually to two parts cold water, stirring constantly. (This varies, depending upon desired consistency.)

______B. Use wire whip to more thoroughly combine water and flour by removing lumps.

______C. If lumps remain, strain slurry through china cap.

31. Making a roux.

______A. Heat trunnion by opening steam valve.

______B. Place butter in trunnion and allow to melt. DO NOT BOIL.

______C. Add flour to melted butter; these are usually in equal amounts, but it depends upon the desired thickness.

______D. Mix with wire whip until all is blended together.

______E. Cook until raw starchy taste has disappeared.

32. Thickening gravies or stews to proper consistencies without lumps forming.

_____A. Make a slurry.

_____B. Add a cool slurry to hot liquid.

OR

_____A. Make a roux.

_____B.1 Add cold roux to hot liquid.

OR

_____B.2 Add hot roux to cold liquid.

33. Whipping egg whites.

_____A. Set up mixer, put bowl in place.

_____B. Separate egg whites from yolks. (Make sure no yolk is present.) Place whites in mixing bowl.

_____C. Beat at high speed until whites turn opaque and form glossy peaks that bend at the tips.

34. Making a custard.

_____A. Assemble and measure ingredients.

_____B. Combine dry ingredients.

_____C. Add correct amount of dry milk to dry ingredients.

_____D. Boil necessary amount of water.

_____E. Separate egg yolks from whites (if recipe indicates).

_____F. Break yolks and whip with a fork (save whites for another recipe).

_____G. Melt butter (do not brown it).

_____H. Stir dry ingredients into melted butter until large lumps are broken up.

_____I. Add proper amount of boiling water slowly, stirring constantly to a thick paste.

_____J. Cook to boiling over medium heat while stirring constantly covering entire bottom area of pan.

_____K. Remove from heat.

_____L. Stir hot mixture, a spoonful at a time, into yolks until yolk temperature is almost as great as hot mixture.

_____M. Pour in remainder of hot mixture.

_____N. Cook for two (approximately) minutes stirring constantly.

_____O. Remove from heat.

_____P. Add vanilla.

_____Q. Stir periodically while cooling to prevent formation of a "skin" on surface of custard.

35. Preparing a cooked fruit dessert.

(This requirement may be met by successful completion of any appropriate task chosen by student.)

36. Making a dessert.

(This requirement may be met by successful completion of any appropriate task chosen by the student.)

37. Preparing a dessert topping or sauce.

(This requirement may be met by successful completion of any appropriate task chosen by the student.)

38. Slicing a pie.

____A. Assemble equipment: pie marker, knife or spatula, pointed spatula.

____B. Mark top of pie into desired number of portions by pressing down pie marker hard enough to make indentations on crust.

____C. Cut along indentations, cleaning or wetting blade of spatula as necessary.

____D. Remove slices of pie to plates with pointed spatula.

____E. If necessary, refrigerate pie until serving.

39.1 Portioning a cake (sheet).

_____A. Determine either number of desirable servings from whole sheet or size (for example, 2" x 3") of portions.

_____B. To accomplish "A" above, make marks (guidelines) on edge of cake.

_____C. Cut into cake at marks with spatula from one edge of pan to the other using a straight edge if necessary.

_____D. Repeat step "C" after turning pan to form square or rectangular portions.

_____E. Remove individual portions to serving plates as needed for service (or prior to service).

39.2 Portioning a cake (layer).

_____A. Make sure cake has cooled sufficiently.

_____B. Determine number of portions desired from cake.

_____C. For an even number of portions, divide cake in half by drawing shallow cuts into icing with edge of knife.

_____D. Continue until desired number of portions have been marked.

_____E. Cut through at marks.

_____F. For odd number of desired portions (if no grid cake marker is available), make small marks at edge of cake until uniform portions are obtained.

_____G. Cut through cake at marks into center of cake.

_____H. Remove cut slices with spatula and put on plates for serving.

40. Using a scoop.

_____A. Grip scoop by handle with scoop bowl facing in the same direction as the palm of the hand.

_____B. Lower scoop into food material.

_____C. Pull bowl of scoop toward you.

_____D. Level off on side of container.

_____E. Depress spring to release scoop product.

41. Cracking an egg without breaking the yolk.

_____A. Take egg in one hand and lightly but firmly tap middle of egg on a sharp edge of a solid object. Do not crack it hard enough to allow the yolk or white to run out.

_____B. Position thumbs on either side of crack so that index fingers and tips of thumbs hold egg in place.

_____C. Move thumbs away from each other while applying a slight amount of pressure toward center of egg.

_____D. As shell separates, release egg from shell into container. Be careful not to catch egg yolk on jagged edge of shell.

42. Separating egg white from egg yolk.

_____A. Crack egg in half on edge of bowl.

_____B. Hold egg over small bowl and break it apart--do not separate completely.

_____C. Let most of the white drain into the bowl keeping the yolk in the lower part of the shell.

_____D. Shift yolk back and forth between shell halves to release additional white (do not catch yolk on jagged shell.)

_____E. Place yolk in a separate bowl.

43. Scrambling an egg.

_____A. Using a treated pan, melt just enough butter (clarified) or margarine in pan to cover bottom of frying pan.

_____B. Combine eggs, milk, salt and pepper in small bowl.

_____C. Using a wire whip or a fork, beat with circular motion to completely blend ingredients. Avoid forming a foam on mixture.

_____D. Pour into heated frying pan and heat over medium-low heat.

_____E. Stir occasionally with narrow spatula or fork so eggs will cook in fairly large pieces. This is accomplished by lifting up the cooked portion to allow uncooked egg mixture to cook.

_____F. Cook until no liquid remains; do not allow any part to brown.

_____G. Remove from heat and serve immediately.

44. Frying an egg

_____A. Using a treated pan, melt just enough butter (clarified) or margarine in pan to cover bottom of frying pan.

_____B. Heat skillet over medium heat.

_____C. Crack eggs, one by one on to a plate; slide individually into hot skillet.

_____D. Fry until egg yolk and white are firm.

_____E. Remove from skillet by first loosening from pan with spatula and then sliding egg onto plate.

Option: Egg may be turned over in pan with spatula. If using grill rather than skillet, make sure it is clean. Follow same procedure, removing with spatula.

45. Poaching an egg.

_____A. Put 2-3 inches of water in pan and bring to a simmer.

_____B. Add salt and vinegar (or lemon juice) to water.

_____C. Crack egg(s) on to cooled dish.

_____D. Slide egg into water along edge of pan.

_____E. Cook for three to five minutes according to desired degree of doneness.

_____F. Remove egg with slotted spoon or perforated ladle to drain off excess water. Serve immediately.

46. Making an omelet.

____A. Blend ingredients with wire whip or rotary beater until thoroughly mixed. Do not allow foam to form.

____B. Melt enough butter or other fat to coat skillet bottom.

____C. Add mixture to heated fat and cook over medium heat.

____D. As egg mixture begins to cook, use a narrow spatula to lift omelet and allow liquid to run underneath. Continue until no more liquid is present.

____E. Continue cooking until bottom of omelet is browned and surface is still shiny.

____F. Fold omelet in half; remove from pan and serve.

47. Making pancakes.

____A. Prepare pancake mix according to directions on box or by recipe.

____B. On a heated, slightly greased grill (or in a skillet), ladle out mixture using ladle head to evenly distribute it.

____C. Turn over with spatula when slightly brown around edges and small bubbles form at surface.

____D. Cook on other side until browned.

____E. Remove with spatula.

48. Treating a frying pan for egg cookery.

_____A. For best results, use a cast aluminum or iron skillet.

_____B. Preheat oven to medium temperature (325°).

_____C. Scour pan vigorously with water and steel wool.

_____D. Rinse pan thoroughly and dry.

_____E. Place pan in hot oven for about five minutes or until too hot to grip with bare hand.

_____F. Remove pan from oven.

_____G. Rub with a paper towel saturated with cooking oil.

_____H. Put pan aside for several hours.

_____I. Before using, sprinkle pan with one teaspoon salt and rub vigorously with a paper towel.

_____J. Remove excess salt by wiping with dry, soft cloth.

_____K. Pan is ready for use.

_____L. After using pan never wash it. Merely wipe with soft, dry cloth.

49. Using automatic slicer for meats and cheeses. (Hobart Model 1612)

_____A. Obtain product to be sliced.

_____B. Place on carrier.

_____C. Place guard over product to hold it in place.

_____D. Set adjustment so that slice thickness is regulated.

_____E. Turn machine blade on.

_____F. If feed is not automatic, move feeder back and forth across blade.

_____G. As slices are cut, they may be removed from slicer base and placed in a pan.

50. Spread butter or mayonnaise on bread with as few movements as possible.

____A. Soften butter at room temperature. DO NOT MELT.

____B. Place bread on flat surface.

____C. With small size spatula place about one teaspoon butter (or mayonnaise) in center of bread slice.

____D. Hold bread slice with one hand to prevent it from moving.

____E. With a circular motion spread butter or mayonnaise only to edges of bread slice.

51. Grilling a sandwich.

____A. Preheat grill to desired temperature.

____B. Brush both surfaces of sandwich with melted butter or margarine.

____C. Place on grill until side is browned.

____D. Turn sandwich with a spatula or a turner.

____E. Brown second side.

____F. Remove from grill and serve immediately.

52. Slicing a sandwich.

____A. Place finished sandwich on cutting board.

____B. Obtain serrated or French knife.

____C. Choose way for slicing (in triangles etc.).

____D. Steady sandwich with one hand.

____E. Begin to slice by moving knife in slow, easy motion across top layer of bread.

____F. Continue slicing with a saw-like motion. Do not press down hard.

____G. Cut through all layers of bread and filling.

53. Using an automatic chopper-grinder. (Hobart Model 84142)

_____A. Remove cover from vegetable chopper and store on shelf underneath chopper.

_____B. Obtain food item to be processed.

_____C. Food item should be cut in as uniform size as possible.

_____D. Place food item in round bowl making certain not to overload.

_____E. Turn switch to "on" position and process food item to desired stage of fineness.

_____F. Chopper will not turn "on" unless bowl guard is secure. (This is a built-in safety feature.)

_____G. When desired stage of fineness is reached, turn switch to "off."

_____H. With a rubber scraper, scrape out processed food item into a pan or bowl.

_____I. To remove all processed food, switch will have to be turned "on" then "off" quickly.

_____J. Safety latch on bowl cover will have to be released in order to remove all processed food.

_____K. Releasing safety latch exposes cutting blades; this step (J) requires a great deal of care to prevent cuts.

54. Portioning solid sandwich fillings.

_____A. Slice meats and cheeses into thin pieces on automatic slicer.

_____B. Determine amount of filling to be used in sandwich (i.e., three ounces).

_____C. Weigh individual portions on ounce-portion scale.

_____D. Place weighed portions on sandwich paper and stack in pan for future use. Refrigerate.

Note: This same method of portioning is used for entree items that require sliced meats.

55. Portioning salad-type sandwich fillings.

_____A. Determine size of portion to be used for sandwiches (for example, three ounces).

_____B. Obtain scoop that measures this amount (for example, #16).

_____C. Follow directions in skill #40 for using a scoop.

_____D. Place scoop of filling in center of slice of bread.

_____E. Follow directions in skill #50 for spreading filling on bread.

56. Carving a rib roast. (right-handed person)

_____A. Remove backbone from ribs

_____B. Place roast on cutting board, broader surface down.

_____C. Set roast before you, ribs to left and ends of ribs pointing toward you.

_____D. Check knife to be sure it is razor sharp.

_____E. Insert carving fork securely between two top ribs.

_____F. Start at right outside edge (at broadest point) and slice across face of roast toward rib side.

_____G. When knife blade reaches rib, loosen slice by cutting along full length of rib bone with point of knife.

_____H. As each slice is cut, slide knife blade under it, steadying it with a fork, and lift to platter.

57. Carving a rolled roast

_____A. Place roast on its side on carving board. Make sure it rests firmly. Do not remove cords before carving.

_____B. Insert fork into left side of roast about 2" from end.

_____C. Slice across grain from far side of roast toward fork; make first slice a little thicker than the rest so as to get a level surface.

_____D. Reinsert fork lower for each slice, severing each cord as it is reached.

_____E. As each slice is cut, slide knife blade under it, steadying with fork, and lift slice to platter.

58. Sharpening knives with steel.

_____A. Grasp steel firmly in left hand.

_____B. Make certain all fingers and thumb are under the guard.

_____C. Position steel in such a way that it is at waist level or slightly above and almost diagonal to body.

_____D. Grasp knife firmly in right hand.

_____E. Place heel of knife blade against tip of steel.

_____F. Cutting edge of knife touches steel at about a 5° angle.

_____G. Draw knife blade down across steel toward left hand.

_____H. Pass entire blade of knife lightly over steel.

_____I. Return knife blade to opposite side of steel and repeat step "G".

_____J. This passes opposite side of entire knife blade lightly over steel.

_____K. Repeat steps "G-J" until the movement is mastered.

59. Determining doneness of a roast using meat thermometer.

_____A. Prepare roast for oven.

_____B. Insert thermometer into center of thickest muscle. It should not be placed near or touching any bone.

_____C. When thermometer gives desired reading, remove roast from oven.

60. Skinning a tenderloin.

There is no written checklist for this skill. This skill should be learned by consulting with appropriate worker or supervisor and performed by student only under direct observation of his superior.

61. Boning a roast.

There is no written checklist for this skill. This skill should be learned by consulting with appropriate worker or supervisor and performed by student only under direct observation of his superior.

62. Rolling a roast

There is no written checklist for this skill. This skill should be learned by consulting with appropriate worker or supervisor and performed by student only under direct observation of his superior.

63. Cutting a pocket in a pork chop.

______A. Chop should be approximately one inch thick.

______B. Place rib side of chop against cutting board.

______C. With sharp knife, cut into loin so that there is an even amount of meat on either side of cut.

______D. Do not cut through top of chop nor beyond rib at back of chop.

64. Turning meat on a broiler.

______A. When blood appears on surface of meat, it is ready to be turned.

______B. Take tongs or two blunt-ended instruments and lift meat from broiler rack.

______C. Turn meat, taking care not to puncture surface.

______D. When making additional turns arrange meat on grids so that grid pattern forms x's on surface of meat.

65. Scoring fat before broiling

______A. Sharp knife is used.

______B. Hold meat, fat side pointing up from cutting surface.

______C. Beginning at either end of fat, make cuts about one inch apart through fat to edge of muscle. DO NOT cut into meat.

66. Adjusting broiler.

______A. Place rack at lowest level by moving lever arm to left and pressing downward.

______B. Determine appropriate distance from heat source where grid should be.

______C. Raise lever to move grid to appropriate height.

______D. Move lever arm to right so that it is held by notch.

67. Boning chicken breasts.

_____A. Place chicken breast with open cavity down on cutting board. (This reduces amount of sliding that will occur.)

_____B. With a boning knife against the rib cage, begin cutting the flesh away from the bones.

_____C. Keep the knife against the bone while cutting, being careful not to cut into the fleshy part of the meat.

_____D. As the flesh is loosened from the bones, grasp it and gently pull away, as you continue to cut, from the rib cage and keel bone.

_____E. Hold the chicken breast firmly to prevent sliding.

_____F. As the flesh is cut away from the bone (almost half), gently turn the chicken breast--cavity side up--and continue cutting away from the bone.

_____G. Make sure knife does not cut through the thin part of the flesh at the keel bone.

_____H. Place the boneless chicken breast in the proper pan for processing.

_____I. Care must be taken so that the skin remains intact.

68. Cutting a whole chicken into parts.

_____A. Place bird in front of you on cutting board with legs to right.

_____B. Bend whole leg back away from bird and with a sharp knife, cut leg off at joint above thigh. Repeat for other leg.

_____C. If so desired, cut through joint between drumstick and thigh once leg has been removed from bird.

_____D. Bend whole wing away from bird and sever at joint. Repeat for second wing.

_____E. Cut whole bird in half through breastbone cartlidge and backbone.

_____F. Cut diagonally through (following ribs) to separate back from breast.

69.1 Determining doneness of a turkey with a meat thermometer. (stuffed)

_____A. Insert thermometer into center of stuffing.

_____B. When temperature of 185° F. has been reached, remove turkey from oven.

69.2 Determining doneness of a whole turkey (unstuffed) with a meat thermometer.

_____A. Insert thermometer into thickest part of thigh.

_____B. Make sure it is not resting on the bone.

_____C. When temperature of 185° F. has been reached, remove turkey from oven.

70. Testing doneness of fish.

_____A. Remove pan from oven or broiler.

_____B. Take fork with prongs facing down and gently insert prongs about 1/2 inch into edge of fish.

_____C. Apply a small amount of pressure; pull fork toward yourself.

_____D. If fish "flakes" apart, it is adequately cooked.

71. Portioning fish (raw or cooked).

There is no written checklist for this skill. This skill should be learned by consulting with appropriate worker or supervisor and performed by student only under direct observation of his superior.

72. Cleaning a whole fish.

There is no written checklist for this skill. This skill should be learned by consulting with appropriate worker or supervisor and performed by student only under direct observation of his superior.

73. Cleaning shrimp. (May be cleaned before or after cooking.)

_____A. Make sure shrimp is sufficiently thawed if previously frozen or cooked sufficiently if recently cooked.

_____B. If tail is not needed (as in shrimp salad), it should be cut off about 1/8 inch below where the fan stops.

_____C. A special cleaning instrument may be used to remove the shell and the legs. It is inserted into the vein under the top part of the shell and pushed the full length of the shrimp. When lifted, the shell breaks and can be removed in almost one piece. OR The shell may be peeled back by loosening it under the belly of the shrimp and removing the shell and legs.

_____D. To remove the vein, cut about 1/8-1/4 inch deep along the full length of the back. Place the shrimp under slowly running cold water and use a paring knife to lift and release the vein. (This may be dark in color.)

_____E. Wash thoroughly.

APPENDIX B

VOCATIONAL COMMITMENT
INDEX AND MANUAL

INTRODUCTION

The Vocational Commitment Index was developed as a means of assessing the quality of an individual's relationship to his vocation. Hubbard's (1971) effort to explore the theoretical foundations of vocational commitment concluded,

> 1. Vocational commitment is an important and desired attribute of individuals; it benefits both the committed individual and the vocation in which he is working.
>
> 2. The theories of vocational development and occupational choice offer a sound basis on which to build a theory of vocational commitment. Super's (1953) Theory of Vocational Development, in particular, offers some suggestions as to how and when vocational commitment occurs.
>
> 3. The variables of implementation of self concept, involvement, need, gratification, satisfaction with vocation, and identification with vocation are supported by both research studies and theories. These variables are of the utmost importance to a theory of vocational commitment.
>
> (Hubbard, 1971, p. 58)

Hubbard formulated two major propositions about the construct of vocational commitment. These are,

> 1. Commitment to a vocation occurs through a process of implementation of a self concept, involvement, need gratification, satisfaction with the vocation, and identification with the vocation.
>
> 2. Depth of commitment is dependent upon the continuous repetition of this process within the vocation and the perception that the vocation is capable of providing continuous opportunities for personal rewards.
>
> (Hubbard, 1971, p. 59)

Based on these propositions, Hubbard asserts that "(a) choice of vocation does not necessarily indicate full commitment to the vocation; (b) vocational commitment implies more than just remaining in the vocation; and (c) vocational commitment may remain static, increase, or decrease in depth"

(Hubbard, 1971, p.59)

The process of vocational commitment described by Hubbard begins with the choice of a vocation which is perceived by the individual to be congruent with his self concept. Upon entering the vocation, the individual invests some personal resources such as time, money and energy in the chosen occupation. If the personal investment yields dissatisfaction, limited rewards, and little support of the individual's self concept, the individual is likely to not become committed to the vocation. If the personal investments yield positive rewards, support of the self concept and need gratification, it is likely that the individual will become committed to the vocation. When the commitment process is repeated again and again yielding positive results, the individual is likely to develop even stronger vocational commitment. Vocational commitment can decrease or cease if the individual changes in ways which conflict with his original vocational self concept, or if the vocation itself changes in ways which the individual perceives to be negative.

CHARACTERISTICS OF VOCATIONAL COMMITMENT

From the literature reviewed, the following characteristics are set forth as being representative of vocationally committed individuals.

1. He invests a significant amount of his money and time in preparation for his vocation. (Ginzberg and Herma, 1964; Becker and Carper, 1956; Perry, 1970)

2. He specializes within his vocation, but feels a part of the total vocation. (Super, 1957, 1963; Blauner, 1964; Ford, 1969)

3. He exerts a large amount of mental and/or physical energy in his vocational work. (Blauner, 1964; Vroom, 1964; Ginzberg and Herma, 1964; Ford, 1969; Perry, 1970; Roe, 1966)

4. He is ego-involved in his vocation. (Holt, 1945; Kausler, 1951; Borow, 1964)

5. He increases his identification with and commitment to his vocation. (Borow, 1964; Katz, 1964; Blauner, 1964; Eastman, 1965; Steffler, 1966; Brown, 1969; Perry, 1970; Ford, 1969; Becker and Carper, 1956; Miller and Form, 1951)

6. He is motivated to act and to persist in his vocational work. (Katz, 1964; Vroom, 1964; Ginzberg and Herma, 1964; White, 1966; Wnuk, 1970)

7. He continuously finds challenges, new learnings, and meaningfulness in his vocational work. (Hanson, 1955; Blauner, 1964; Ford, 1969; Wnuk, 1970)

8. He perceives the vocation as a provider of important intrinsic satisfactions. (Ginzberg, Ginzberg, Axelrod and Herma, 1956; Herzberg, 1959; Blauner, 1964; Borow, 1964; Katz, 1964; Brown, 1969; Ford, 1969; Janson, 1970; Berg, 1970; Wnuk, 1970; Chew, 1971)

9. He is satisfying his motivating needs, particularly his need for self actualization. (Maslow, 1954; Blauner, 1964; Roe, 1966)

10. He is more productive in his work. (Gellerman, 1963; Vroom, 1964; Blauner, 1964; Ford, 1969)

11. He perceives similarities between his self concept and his concept of the vocational image, purposes and values. (Foote, 1951; Gouldner, 1960; Rosenberg, 1957; Vroom, 1959; Orzack, 1959; Barry and Wolf, 1962; Brown, 1969)

12. He attempts to establish and maintain congruency between his self concept and his concept of the vocation. (James, 1965; Stefflre, 1966; Brown, 1969)

13.. He perceives himself to be a part of the vocation. (Becker, and Carper, 1956; Gouldner, 1960; Brown, 1969; Katz, 1964; Blauner, 1964; Epperson, 1965)

14. He perceives himself to be a loyal and committed member of the vocation. (Becker and Carper, 1956; Orzack, 1959; Blauner, 1964; Eastman, 1965; Katz, 1964)

15. He conforms to acceptable modes of behavior, incorporates values and goals and acquires ideologies of the vocation. (Becker and Carper, 1956; Gouldner, 1960; Nosow and Form, 1962; Katz, 1964; Blauner, 1964)

16. He perceives the vocation and his actual work as being valuable, important, and meaningful. (Dubin, 1955; Orzack, 1959; Blauner, 1964; Eastman, 1965; Roe, 1966)

17. He has positive attitudes toward the vocation. (Grusky, 1966)

18. He defines himself in terms of his membership in the vocation, and defends the image of the vocation as he would defend his own image. (Miller and Form, 1951; Katz, 1964; Brown, 1969)

19. He is emotionally involved with his vocational work. (Miller and Form, 1951; Foote, 1951; Hanson, 1955; Becker and Carper, 1956; Orzack, 1959; Blauner, 1964; Roe, 1966; Brown, 1969)

20. He frequently involves himself mentally and physically in his vocational work. (Foote, 1951; Becker and Carper, 1956; Gouldner, 1960; Vollmer, 1960; Blauner, 1964; Katz, 1964; Brown, 1969; Perry, 1970)

21. He perceives the vocation as a provider of intrinsic satisfactions. (Orzack, 1959; Blauner, 1964; Borow, 1964; Brown, 1969; Katz, 1964; Grusky, 1966)

22. He remains in his vocation and further commits himself--to the vocation. (Foote, 1951; Becker and Carper, 1956; Katz, 1964; Blauner, 1964; Grusky, 1966)

DESCRIPTION OF THE VOCATIONAL COMMITMENT INDEX

The characteristics of vocational commitment were used as a basis for generating items for the Vocational Commitment Index. The pilot form of the index contains 114 statements describing an aspect of one's relationship to his vocation (See Appendix A.) The final version of the device contains 74 items (See Appendix B). The subject determines the extent to which each item describes his relationship to his job, and responds in accordance with the response categories of strongly agree, agree, disagree, and strongly disagree.

In scoring the device the responses were weighted according to the following scale:

A response of strongly agree = 4
A response of agree = 3
A response of disagree = 2
A response of strongly disagree = 1

Responses to all items are then summed to yield an individual's total score. Scores can range from 74, which is interpreted as representing a vocationally noncommitted individual; to 296, which is interpreted as representing a highly committed individual.

REFINEMENT OF THE INDEX

Pilot Sample

In refining the instrument, the pilot form of the index was administered to a sample of 123 subjects. The sample consisted of 38 teachers of secondary vocational food service students, 14 first or second year college students in Hotel and Institution Administration at The Pennsylvania State University and 33 graduates of a baccalaureate degree program in Food Service and Housing Administration for The Pennsylvania State University, who are currently employed in occupations related to their undergraduate program. In all cases but one, subjects were solicited through a letter (See Appendix C) requesting cooperation with this project. One hundred and seventy-five letters containing the pilot form of the Index and an answer sheet were mailed out. Fifty of which were sent to individuals who had graduated from the Food Service and Housing Administration baccalaureate degree program, 75 to vocational food service teachers and 50 to vocational food service students.

In the case of the undergraduate students, participation in this project was solicited through their enrollment in basic professional courses during Winter term, 1972 at the university.

This pilot sample is perceived as being representative of individuals in the hospitality industry at all levels of vocational development from initial vocational choice to experienced employees to those persons in managerial roles. Although additional data on these subjects was not secured, it is believed that the four subgroups of subjects do represent different age levels, both sexes and various socioeconomic classes.

ANALYSIS OF DATA

The pilot responses were then treated by an item analysis to determine the quality of the items and the total test. Table 1 presents the results of the item analysis perform on the pilot data including for each item a biserial correlation; a point-biserial correlation; and the t-value associated with it; and evaluations of item difficulty, item discrimination, and of the total item.

The criteria for refining the instrument were internal consistency of the device, the selection of items which correlated positively with total test score and the selection of items which provided the greater evidence of eliciting variation in responses. Those items which received a total item evaluation of A, B, or C were retained to comprise the final version of the instrument.

Using the pilot data, these 74 items were subjected to additional analysis to yield information on test reliability and validity.

VALIDITY OF THE INDEX

In an effort to establish content validity of the instrument, 16 graduate students of Home Economics Education at The Pennsylvania State University participated in reviewing the characteristics of vocational commitment (See Appendix D) and responding to each item on the pilot form of the Index according to the following directions:

> Check the scale which best represents the relation between the test item and the characteristics of vocational commitment.
>
> Fill in Column A if the item highly reflects the characteristics of vocational commitment.
>
> Fill in Column B if the item slightly reflects the characteristics of vocational commitment.
>
> Fill in Column C if the item does not reflect the characteristics of vocational commitment.

The results of this effort were tallied and converted to numerical quantities in the following manner. A rating of highly related to the characteristics of vocational commitment received a weight of 3, a rating of slightly relevant to the characteristics specified received a weight of 2, and a rating of not relevant to the characteristics specified received a weight of 1. The weights were then multiplied by the respective frequency of the three response categories and summed to yield a single number representative of the content validity for each item. These data are presented in Table 2. The content validity of the items ranged from 16 to 48 with the less valid items represented by validity ratings of 32 and below, and the more valid items represented by ratings of 33 and above.

Table 1. Results of an Item Analysis performed on the Pilot From of the Vocational Commitment Index

Item No.	Biserial Correlation	Point-Biserial Correlation	t-value	Evaluation of Item Difficulty	Evaluation of Item Discrimination	Evaluation of Total Item
1	.162	.129	1.428	A	D	B
2	.345	.259	2.956	C	C	C
3	.183	.140	1.552	C	D	C
4	.343	.264	3.009	B	C	B
5	.140	.108	1.192	B	D	C
6	.426	.322	3.739	C	C	C
7	.130	.097	1.075	C	D	C
8	.342	.271	3.100	A	C	B
9	.339	.258	2.938	C	C	C
10	.473	.345	4.037	C	C	C
11	-.497	-.296	-3.404	E	E	E
12	-.334	-.198	-2.225	E	E	E
13	.220	.146	1.623	E	D	D
14	.395	.297	3.418	C	C	C
15	.351	.273	3.119	B	C	B
16	-.089	-.057	-0.625	E	E	E
17	.218	.158	1.759	C	D	C
18	-.078	-.046	-0.511	E	E	E
19	.559	.433	5.283	B	B	B
20	.224	.167	1.863	C	D	C
21	-.211	-.129	-1.427	E	E	E
22	.102	.064	.701	E	E	E
23	-.021	-.014	-0.152	D	E	E
24	.369	.248	2.812	D	C	C
25	.433	.342	3.998	B	C	B

Table 1. Continued

Item No.	Biserial Correlation	Point-Biserial Correlation	t-value	Evaluation of Item Difficulty	 Item Discrimination	 Total Item
26	-.018	-.011	-0.120	E	E	E
27	-.114	-.073	-0.804	E	E	E
28	.386	.302	3.489	B	C	B
29	.383	.287	3.295	C	C	C
30	.281	.218	2.457	B	D	C
31	.308	.239	2.706	B	D	C
32	-.416	-.248	-2.817	E	E	E
33	.339	.261	2.977	B	C	B
34	.640	.505	6.436	A	B	A
35	.539	.430	5.244	A	B	A
36	-.405	-.242	-2.743	E	E	E
37	.603	.480	6.020	A	B	A
38	.534	.425	5.158	A	B	A
39	.028	.017	.182	E	E	E
40	.579	.441	5.405	C	B	B
41	-.389	-.234	-2.649	E	E	E
42	.553	.431	5.255	B	B	B
43	.566	.433	5.281	B	B	B
44	-.468	-.285	-3.267	E	E	E
45	-.084	-.050	-0.553	E	E	E
46	.240	.179	1.998	C	D	C
47	-.068	-.042	-0.464	E	E	E
48	.597	.475	5.932	A	B	A
49	.707	.562	7.477	A	B	A
50	-.484	-.289	-3.316	E	E	E

Table 1. Continued

Item No.	Biserial Correlation	Point-Biserial Correlation	t-value	Evaluation of		
				Item Difficulty	Item Discrimination	Total Item
51	.609	.464	5.761	C	B	B
52	.495	.393	4.696	A	C	B
53	-.260	-.156	-1.742	E	E	E
54	.503	.381	4.536	C	C	C
55	.126	.089	.987	D	D	D
56	.316	.210	2.364	D	C	C
57	.604	.478	5.985	A	B	A
58	.664	.517	6.645	B	B	B
59	.364	.239	2.712	D	C	C
60	.154	.103	1.144	D	D	D
61	-.334	-.210	-2.365	E	E	E
62	-.262	-.161	-1.797	E	E	E
63	.295	.235	2.660	A	D	B
64	-.202	-.121	-1.346	E	E	E
65	.364	.277	3.174	C	C	C
66	-.204	-.123	-1.359	E	E	E
67	.315	.209	2.356	D	C	C
68	.410	.323	3.753	B	C	B
69	.454	.362	4.270	A	C	B
70	.506	.401	4.822	A	C	B
71	.219	.152	1.694	D	D	D
72	.555	.434	5.304	B	B	B
73	.159	.095	1.044	E	D	D
74	.268	.196	2.194	C	D	C
75	.536	.401	4.821	C	B	B

Table 1. Continued

				Evaluation of		
Item No.	Biserial Correlation	Point-Biserial Correlation	t-value	Item Difficulty	Item Discrimination	Total Item
76	.513	.397	4.756	B	B	B
77	.353	.247	2.808	D	C	C
78	.542	.407	4.907	C	B	B
79	.509	.379	4.510	C	C	C
80	.099	.064	.706	E	E	E
81	.499	.369	4.373	C	C	C
82	.193	.126	1.394	D	D	D
83	.437	.343	4.018	B	C	B
84	.632	.492	6.219	B	B	B
85	.591	.456	5.642	B	B	B
86	.560	.433	5.277	B	B	B
87	.283	.190	2.129	D	D	D
88	-.034	-.023	-0.252	D	E	E
89	.347	.245	2.777	D	C	C
90	.385	.293	3.368	C	C	C
91	.647	.472	5.885	C	B	B
92	.538	.371	4.394	D	B	C
93	.553	.481	5.057	C	B	B
94	.492	.384	4.579	B	C	B
95	.380	.291	3.351	B	C	B
96	-.293	-.177	-1.975	E	E	E
97	.378	.288	3.307	C	C	C
98	.451	.336	3.921	C	C	C
99	-.115	-.069	-0.757	E	E	E
100	.064	.039	0.429	E	E	E

Table 1. Continued

Item No.	Biserial Correlation	Point-Biserial Correlation	t-value	Evaluation of Item Dificulty	Evaluation of Item Discrimination	Evaluation of Total Item
101	.348	.227	2.561	D	C	C
102	.122	.073	0.801	E	D	D
103	.533	.391	4.673	C	B	B
104	-.218	-.133	-1.474	E	E	E
105	.450	.318	3.684	D	C	C
106	-.211	-.130	-1.439	E	E	E
107	.579	.440	5.397	C	B	B
108	.176	.107	1.184	E	D	D
109	.284	.205	2.309	C	D	C
110	-.154	-.103	-1.135	E	E	E
111	-.406	-.244	-2.771	E	E	E
112	.664	.511	6.540	B	B	B
113	.595	.473	5.907	A	B	A
114	.372	.282	3.230	C	C	C

Table 2. Content Validity Ratings of Items on the Pilot Form of Vocational Commitment Index

Item No.	Frequency of Rating Highly Related	Slightly Related	Unrelated	Validity Rating
1	6	8	0	34
2	10	4	2	40
3	7	8	1	38
4	10	6	0	42
5	6	6	3	33
6	8	5	3	37
7	6	9	0	36
8	15	1	0	47
9	11	2	3	40
10	8	8	0	40
11 *	0	0	15	15
12 *	0	2	12	16
13 *	1	2	12	19
14	9	5	2	39
15	12	3	1	43
16 *	8	3	5	35
17	13	2	1	44
18 *	1	3	11	20
19	14	2	0	46
20	13	3	0	45
21 *	3	10	3	32
22 *	7	7	2	37
23 *	8	5	3	37
24	9	5	2	39
25	12	4	0	44
26*	0	1	13	15
27*	5	2	8	29
28	11	4	2	43
29	10	3	0	36
30	15	1	0	47
31	13	3	0	45
32 *	2	1	10	18

Table 2. Content Validity Ratings of Items on the Pilot Form of Vocational Commitment Index

	Frequency of Rating			
Item No.	Highly Related	Slightly Related	Unrelated	Validity Rating
33	7	7	3	38
34	8	6	2	38
35	15	1	0	47
36*	1	0	12	15
37	12	4	0	44
38	14	2	0	46
39*	1	1	12	17
40	12	4	0	44
41*	0	0	13	13
42	12	4	0	44
43	15	1	0	47
44*	2	1	12	20
45*	0	2	10	14
46	9	7	0	41
47*	0	2	13	17
48	15	1	0	47
49	15	0	0	45
50*	1	2	11	20
51	12	4	0	44
52	14	2	0	46
53*	1	1	13	18
54	9	7	0	41
55*	3	10	2	31
56	8	8	0	40
57	16	0	0	48
58	14	2	0	46
59	7	5	3	34
60*	8	9	1	43
61*	2	2	10	20
62*	0	3	11	17
63	13	3	0	45
64*	1	2	11	18

Table 2. Content Validity Ratings of Items on the Pilot Form of Vocational Commitment Index

Item No.	Frequency of Rating Highly Related	 Slightly Related	 Unrelated	Validity Rating
65	15	0	1	46
66*	1	3	9	18
67	10	3	2	38
68	11	5	0	43
69	8	6	2	38
70	13	3	2	47
71*	5	11	0	37
72	13	3	0	45
73*	1	0	14	17
74	11	5	0	43
75	9	7	0	41
76	11	5	0	43
77	6	8	1	35
78	10	6	0	42
79	9	5	2	39
80*	6	7	3	35
81	11	5	0	43
82*	4	12	0	36
83	10	6	0	42
84	14	2	0	46
85	10	5	1	41
86	14	2	0	46
87*	8	4	4	36
88*	0	4	9	17
89	4	10	2	34
90	9	4	3	38
91	12	4	0	44
92	9	4	3	38
93	8	7	1	39
94	13	3	0	45

Table 2. Content Validity Ratings of Items on the Pilot Form of Vocational Commitment Index

	Frequency of Rating			
Item No.	Highly Related	Slightly Related	Unrelated	Validity Rating
95	10	6	0	42
96	0	5	10	20
97	5	11	0	37
98	11	5	0	43
99	2	0	14	20
100	0	0	12	12
101	10	1	5	37
102	6	3	7	31
103	12	4	0	44
104	1	3	12	21
105	12	4	0	44
106	1	0	13	16
107	10	6	0	42
108	8	3	5	35
109	7	7	2	37
110	1	1	12	17
111	2	2	11	21
112	11	4	0	41
113	9	5	2	39
114	7	9	0	39

* Items omitted in final version of Index.

It is interesting to note that of the forty items eliminated through the refining process 31 received content validity ratings indicative of little or no relevance to the characteristics of vocational commitment and 9 received ratings indicative of relevance to the concept. These data, presented in Table 3, further indicate that the items retained in the final version of the Index, received ratings indicative of content validity.

Table 3. Numbers of Items Retained and Omitted in Final Version of the Vocational Commitment Index Categorized by Content Validity Ratings

	More Valid Items	Less Valid Items
Omitted in Final Index	9	31
Retained in Final Index	74	0

In an effort to determine if vocational commitment as measured by the Vocational Commitment Index differed between the four groups of subjects comprising the pilot population, a one-way analysis of variance was computed on group means. The results are presented in Table 4. This analysis yielded an F ratio of 12.112 ($p < .01$) indicating a significant difference between group means on vocational commitment.

Table 4. Analysis of Variance between Four Groups of Subjects on Vocational Commitment Index Total Score

Source	df	Sum of Squares	Mean Square	F Ratio
Treatment	3	18498.76	6166.26	12.1121*
Error	119	60582.65	509.10	
Total	122	79081.42		

Correction term= 6459864.59

*p.$<$.01

Table 5 presents the means, standard deviations for each of the four groups. These data indicate that vocational commitment does differ among individuals at various stages of career development and that the Vocational Commitment Index is useful in assessing this variable.

Table 5. Means and Standard Deviation of Four Groups on the Vocational Commitment Index.

Group	n	Mean	Standard Deviation
Undergraduate Students	14	209.36	34.60
Secondary Vocational Students	38	217.90	20.95
Employed College Graduates	33	234.79	22.33
Vocational Teachers	38	242.87	18.61

RELIABILITY OF THE INDEX

Table 6 presents information relevant to the reliability of the pilot and final forms of the Vocational Commitment Index.

Table 6. Descriptive Information on the Pilot and Final Form of the Vocational Commitment Index

	Pilot Form	Final Form
Mean difficulty of items	.234	.327
Average item-total score correlation	.247	.638
Standard error of correlation	.091	.091
Estimated interitem correlation	.061	.407
Kuder-Richardson 20 reliability	.993	.960
Index mean	336.93	231.80
Index Variance	1122.50	282.91
Standard deviation	33.50	16.82
Standard error of measurement	2.76	3.37

SUMMARY

The Vocational Commitment Index is a 74 item instrument which indicates promise as a valid and reliable tool for assessing vocational commitment. It has been administered to 123 subjects who range from secondary vocational students to college graduates employed in the hospitality industry.

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PILOT FORM OF THE VOCATIONAL COMMITMENT INDEX

DIRECTIONS:

Read each item and determine if it describes YOUR RELATIONSHIP TO YOUR JOB. Then, on the answer sheet fill in the appropriate column according to the scale below.

Fill in:

Column A if you Strongly Agree
Column B if you Agree
Column C if you Disagree
Column D if you Strongly Disagree

DEFINITIONS:

In this measure, the terms job, work occupation and vocation are not interchangeable. The definitions for these terms are presented below.

Job:	The position an individual holds as an employee (example: cook, dishwasher, manager)
Work:	The tasks performed in fulfilling job expectations. (example: preparing foods, taking inventory of stock)
Occupation or Vocation:	refers to the field of jobs in the food service industry.

VOCATIONAL COMMITMENT

1. I see myself as having most of the necessary skills for my job.
2. Before I started this job, I could picture myself doing this type of work.
3. I accept changes within my job readily.
4. Although I do not always agree with the changes made in my job, I try to make the most of them.
5. I am more satisfied with my job when things go well.
6. I feel like doing more work when I am happy with my job.
7. I experience an unhappy feeling when things go wrong on my job.
8. I am not pleased with myself if I cannot do the things required of me on my job.
9. I try to follow the example of leaders in this occupation.
10. I see myself as one of "the group" of workers in this particular occupation.
11. I do not agree with the things my job represents to me.
12. I think that I would be happier in a whole new line of work.
13. I would quit my job it they made any changes in it.
14. I try to act as people expect a person doing my job to act.
15. Doing this job comes very natural to me.
16. I am happier doing my job, than I am on my own time.
17. I feel that if something changes within my occupation, I personally must also make changes within myself.
18. I refuse to change my ways of doing things just because there are changes made in my occupation.
19. I feel very close to my occupation.
20. I can change myself to meet the varied demands of my job.
21. I have conflicts about performing some of the tasks required by this occupation.
22. I have resolved any conflicts I had about performing in this occupation.
23. When I make a mistake on the job, I tend to feel badly about it for quite a while.
24. I think about some of the mistakes I have made on the job when I am relaxing.

25. I try to live up to my supervisor's expectations for performance in my job.

26. I know I could do better on my job, but I do not even try.

27. I really do not see myself as advancing in this occupation.

28. I see myself as progressing from this job to jobs which are better within this occupation.

29. I have spent some of my own money on equipment and materials to help me in my job.

30. I am taking courses to help me perform in my job.

31. I am taking courses to help me advance in this occupation.

32. I see no purpose in taking courses to work in this occupation.

33. My job requires physical energy and strength.

34. My job requires mental ability.

35. My job is challenging and interesting to me.

36. My job is very boring to me.

37. I know that my job is important to the success of the entire operation.

38. I continue to learn interesting things about my work.

39. My job does not make any difference to the success or failure of the entire operation.

40. I feel good about my work on the job.

41. I will not spend any of my own money on materials needed for my job.

42. I spend some of my free time trying to improve myself on the job by reading about it in related magazines.

43. I take part in workshops or programs to help me do a better job.

44. Once I leave work, I do not want to spend any of my time even thinking about it.

45. I do just enough work to get by on my job.

46. I exert large amounts of energy when I am working on my job.

47. I become upset if I have to work through my breaks or lunch hour in order to finish a job.

48. My job is important to me.

49. I find there is always something new to learn about my job.

50. My work is so routine, I can do it without thinking.

51. When I leave work at the end of the day, I feel that I have done something worthwhile.

52. I am willing to work overtime.

53. I am dissatisfied with the job I now have.

54. I am pleased when I do more work than that which was expected of me.

55. I do more work than a lot of the people who do this job.

56. I participate in activities related to my work such as a union.

57. I am proud to tell people what kind of a job I have.

58. I defend my job when someone else criticizes it.

59. I will keep this job until retirement.

60. I would like to get a different job, but one in the same type of occupation.

61. I am only working at this job until something better comes along.

62. I do not want any part of company organizations like retirement clubs, bowling teams, etc.

63. I rarely miss work.

64. I believe that I should use every "sick day" given to me over a period of time.

65. I feel badly if I have to miss work when I am ill.

66. This is the first paid job I have had.

67. I have no desire to leave this job for any reason.

68. I work well with the other employees on the job.

69. I do my part of the job and expect everyone else to do their part.

70. I have respect for the other people on this job.

71. I tend to do my job better than others have done it.

72. I am proud of what I can accomplish in my job.

73. I hate to tell people about my work.

74. I am able to express my creative talents in this occupation.

75. On my job, work is fun and interesting.

76. In my occupation, the work is interesting and enjoyable.

77. My co-workers take an interest in my work.

78. I am interested in what my co-workers do on the job.

79. I study what my co-workers do so that I can progress in this occupation.

80. I think I am more interested in my work than my co-workers are.

81. I belong to organizations related to my occupational field.

82. I change jobs within this occupation.

83. I cooperate with my co-workers.

84. My job interests me in a variety of ways.

85. I like my occupational field better than any others that I could enter.

86. I try to perfect my job skills.

87. I argue with people who attack my occupation.

88. I never know from one week to the next whether or not I will have a job with the company.

89. I do not have to worry about being moved to different jobs within the company.

90. I work hard at this job in order to gain advancements.

91. This job really makes me feel like I am someone important or special.

92. I never criticize my job to other people.

93. Although it has its faults, the good points about my job are most important to me.

94. My job is a specialized one that very few people could do without some type of training.

95. I am confident that I can do anything in my job that my supervisor would ask of me.

96. I become very nervous and upset if I have to do something new or different on my job.

97. I go along with the rules and regulations set up by the company.

98. I find myself believing in and working for the same things that most people in this occupation want.

99. I never tell people that I am a cook, etc.

100. I do not want people to associate me with my job.

101. When someone criticizes my occupation, I personally feel they are criticizing me.

102. I become so involved with my work, both mentally and physically, that I do not even realize what is going on around me.

103. I find that the longer I work at this job, the more it becomes a part of me.

104. If I work at this job one hundred years, I will not feel any better about it then than I do now.

105. I refer to the place I work as "my restaurant", etc.

106. I am embarrassed when I must tell people where I work.

107. If I were just starting to work for the first time, I would choose this same occupation.

108. I would like to keep this job, even if it meant a decrease in pay.

109. Many of the people I work with are also personal friends.

110. My job is so simple, I do not have to use my skills to perform the task.

111. I am dissatisfied because my job gives me very little responsibility.

112. I am enthusiastic about my job.

113. My work results in benefits to many people.

114. I feel that my job is quite permanent.

FINAL FORM OF THE
VOCATIONAL COMMITMENT INDEX

DIRECTIONS:

Read each item and determine if it describes YOUR RELATIONSHIP TO YOUR JOB. Then, on the answer sheet fill in the appropriate column according to the scale below.

Fill in:

Column A if you Strongly Agree
Column B if you Agree
Column C if you Disagree
Column D if you Strongly Disagree

DEFINITIONS:

In this measure, the terms job, work occupation and vocation are not interchangeable. The definitions for these terms are presented below.

Job:	The position an individual holds as an employee (example: cook, dishwasher, manager).
Work:	The tasks performed in fulfilling job expectations. (examples: Preparing foods, taking inventory of stock).
Occupation or Vocation:	Refers to the field of jobs in the food service industry.

VOCATIONAL COMMITMENT

1. I see myself as having most of the necessary skills for my job.
2. Before I started this job, I could picture myself doing this type of work.
3. I accept changes within my job readily.
4. Although I do not always agree with the changes made in my job, I try to make the most of them.
5. I am more satisfied with my job when things go well.
6. I feel like doing more work when I am happy with my job.
7. I experience an unhappy feeling when things go wrong on my job.
8. I am not pleased with myself if I cannot do the things required of me on my job.
9. I try to follow the example of leaders in this occupation.
10. I see myself as one of "the group" of workers in this particular occupation.
11. I try to act as people expect a person doing my job to act.
12. Doing this job comes very natural to me.
13. I feel that if something changes within my occupation, I personally must also make changes within myself.
14. I feel very close to my occupation.
15. I can change myself to meet the varied demands of my job.
16. I think about some of the mistakes I have made on the job when I am relaxing.
17. I try to live up to my supervisor's expectations for performance in my job.
18. I see myself as progressing from this job to jobs which are better within this occupation.
19. I have spent some of my own money on equipment and materials to help me in my job.
20. I am taking courses to help me perform in my job.
21. I am taking courses to help me advance in this occupation.
22. My job requires physical energy and strength.
23. My job requires mental ability.
24. My job is challenging and interesting to me.

25. I know that my job is important to the success of the entire operation.

26. I continue to learn interesting things about my work.

27. I feel good about my work on the job.

28. I spend some of my free time trying to improve myself on the job by reading about it in related magazines.

29. I take part in workshops or programs to help me do a better job.

30. I exert large amounts of energy when I am working on my job.

31. My job is important to me.

32. I find there is always something new to learn about my job.

33. When I leave work at the end of the day, I feel that I have done something worthwhile.

34. I am willing to work overtime.

35. I am pleased when I do more work than that which was expected of me.

36. I participate in activities related to my work such as a union.

37. I am proud to tell people what kind of a job I have.

38. I defend my job when someone else criticizes it.

39. I will keep this job until retirement.

40. I rarely miss work.

41. I feel badly if I have to miss work when I am ill.

42. I have no desire to leave this job for any reason.

43. I work well with the other employees on the job.

44. I do my part of the job and expect everyone else to do their part.

45. I have respect for the other people on this job.

46. I am proud of what I can accomplish in my job.

47. I am able to express my creative talents in this occupation.

48. On my job, work is fun and interesting.

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Letter to Subjects

THE PENNSYLVANIA STATE UNIVERSITY

College of Education
Department of Home Economics Education
University Park, Penna. 16802
865-5441

The departments of Food Service and Housing Administration and Home Economics Education are currently involved in a cooperative project to develop and test out a new associate degree program for food service education based upon the use of individualized learning packets. As part of this project, it is necessary to develop and pretest a device which assesses aspects of one's relationship to his chosen field of work. We are requesting that you assist in the refining of this device. We are asking that you complete the enclosed test as directed and return the completed test in the postage-paid envelop provided. Your cooperation with this project will be greatly appreciated. Your contribution is important to the success of the project. Please do not write your name or any personal information on the answer sheet.

Thank you.

Sincerely,

Susan F. Weis
Assistant Professor

SFW/cjm

Enclosure

CHARACTERISTICS OF VOCATIONALLY COMMITTED INDIVIDUALS USED IN ASSESSING INDEX VALIDITY

The following factors have been found through research to be highly significant to vocational commitment. Would you please read each factor carefully and consider them in rating the items used to assess vocational commitment.

I. Implementation of Self-Concept

A committed person:

1. Sees himself and his job as being much alike.
2. Is able to change his views to meet inconsistencies between his self-concept and concept of occupation.
3. Is more ego-involved in his vocation.
4. Feels pressured to maintain congruity between his concept of self and his concept of the vocation.

II. Vocational Involvement

A committed person:

1. Invests time and money in preparation for his vocation.
2. Feels a part of the whole vocation.
3. Exerts large amounts of energy mental and/or physical in his work.
4. Continuously finds challenges, new learnings and meaningfulness in his vocational work.
5. Views his vocation as a source of satisfaction.
6. Is more productive in his work.
7. Becomes involved in his vocation as a means of personal self-expression.
8. Is more emotionally involved with his vocational work (interested in, supportive of and proud).
9. Feels more a part of the vocation.
10. Is more interested in his vocational work.
11. Is more likely to remain in his vocation and become further committed.
12. Is personally involved in his vocation.

III. Vocational Satisfaction

A committed person:

1. Participates in job organizations which bring him satisfaction.
2. Is rarely absent from work.
3. Does not change jobs often.
4. Is interested in the work.
5. Is co-operative, wants to work together.
6. Respects other employees.
7. Has a feeling of security about his business.
8. Is more motivated to act and persist in his vocational work.
9. Is more productive in his work.
10. Perceives the vocation as a provider of intrinsic satisfaction.
11. Is satisfying more of his motivating needs. (self-actualization)
12. Is more satisfied with the vocation as a whole.
13. Has more positive attitudes toward the vocation.
14. Specializes more within his vocation.

IV. Need Gratification

A committed person:

1. Has a certain degree of self-confidence.
2. Views his job as being meaningful and important.
3. Takes pride in his work and seeks perfection.

V. Identification with the vocation

A committed person:

1. Has a close emotional attachment to his vocation.
2. Loyal to his vocation.
3. Conforms to acceptable modes of behavior.
4. Accepts the values and goals of his vocation.
5. Feels his actual work is important and valuable.
6. Tends to have positive attitudes toward his vocation.
7. Defines himself in terms of his membership in the vocation. (I am a waitress)
8. Defends the image of his vocation as he would defend his own image.
9. Is deeply involved mentally and/or physically in his work.
10. Tends to become even more committed to his chosen vocation.
11. Is emotionally identified with his occupation. (My company, my store)

ACHIEVEMENT TEST
MANUAL

POSTSECONDARY HOSPITALITY EDUCATION

General Information

The Achievement Test in Postsecondary Hospitality Education was developed to assess the degree of mastery of information, skills, and techniques common to the food service industry. This text will be employed in the testing of hypothesis relevant to the performance of students in the Demonstration Program as compared with students in similar programs.

The test is composed of 75 multiple choice items which were developed from existing evaluation materials in the areas common to hospitality education. Table 1 presents the areas of hospitality education represented by test items, the number of items included for each area and the proportion of total test items devoted to each area.

The Achievement Test requires no more than 75 minutes to administer. An answer key is provided in this manual.

As this test was developed from evaluation materials used in postsecondary hospitality education, content validity of the test is assumed. The test will be administered to subjects during the Fall of 1972 and information regarding test reliability will be established at that time. If refinements or revisions are required due to low reliability, they will be accomplished to provide a sound and reliable instrument for further research on this project.

Table 1. Areas of Hospitality Education represented in Achievement test and Number and Proportion of Items for each area.

Area	No. of Items	Proportion of Items
Cost and Portion control	9	.12
Safety and cleanliness	3	.04
Customer service and hospitality occupations	3	.04
Nutrition	7	.09
Food purchasing	13	.17
Food storage	9	.12
Food preparation	26	.35
Equipment	5	.07

ACHIEVEMENT TEST
POSTSECONDARY HOSPITALITY EDUCATION

Answer Key

1. C
2. D
3. B
4. D
5. D
6. A
7. A
8. C
9. B
10. A
11. D
12. D
13. A
14. B
15. D
16. A
17. C
18. A
19. D
20. B
21. B
22. A
23. C
24. C
25. C
26. C
27. B
28. C
29. A
30. C
31. D
32. C
33. D
34. B
35. C
36. C
37. D
38. B
39. D
40. B
41. D
42. B
43. D
44. A
45. A
46. C
47. D
48. B
49. D
50. B
51. C
52. B
53. B
54. D
55. D
56. C
57. B
58. A
59. C
60. D
61. A
62. D
63. B
64. D
65. D
66. C
67. D
68. D
69. D
70. A
71. B
72. D
73. A
74. D
75. B

APPENDIX C

ACHIEVEMENT TEST

POSTSECONDARY HOSPITALITY EDUCATION

DIRECTIONS

Read each question carefully and completely before answering it.

Respond to each question with the answer you believe to be most accurate by placing a check in the appropriate space provided on the answer sheet.

Answer each question as quickly as possible and leave any difficult questions to answer after you have gone through the entire test once.

You will have 75 minutes to complete the 75 items on this test.

ACHIEVEMENT TEST
POSTSECONDARY HOSPITALITY EDUCATION

ANSWER SHEET

Subject Number__________________

School__________________________

Item No.	A	B	C	D	Item No.	A	B	C	D	Item No.	A	B	C	D
1.					26.					51.				
2.					27.					52.				
3.					28.					53.				
4.					29.					54.				
5.					30.					55.				
6.					31.					56.				
7.					32.					57.				
8.					33.					58.				
9.					34.					59.				
10.					35.					60.				
11.					36.					61.				
12.					37.					62.				
13.					38.					63.				
14.					39.					64.				
15.					40.					65.				
16.					41.					66.				
17.					42.					67.				
18.					43.					68.				
19.					44.					69.				
20.					45.					70.				
21.					46.					71.				
22.					47.					72.				
23.					48.					73.				
24.					49.					74.				
25.					50.					75.				

1. The number on a scoop or a dipper indicates the number of scoopfuls required to make

   A. 1 gallon.
   B. 1/2 gallon.
   C. 1 quart.
   D. 1 pint.

2. The common abbreviation for tablespoon is

   A. tsp.
   B. tablesp.
   C. tblsp.
   D. tbsp.

3. The abbreviation "gm." generally means

   A. grain.
   B. gram.
   C. grind.
   D. grand.

4. A whisk or French whip is used most effectively to

   A. combine shortening and flour.
   B. fold eggwhites into a batter.
   C. beat heavy batters.
   D. beat or mix liquids.

5. A cup is not equivalent to

   A. 16 tablespoons.
   B. 1/2 pint.
   C. 1/4 quart.
   D. 1/32 gallon.

6. To "scald" means to

   A. cook in liquid at a temperature below the boiling point.
   B. cook by steaming before boiling.
   C. cook in liquid at a temperature above the boiling point.
   D. boil briefly.

7. Which of the following equals one pound?

   A. 16 tablespoons.
   B. 18 ounces.
   C. 456 grams.
   D. 1 1/2 liquid cups.

8. To aid the removal of skin from nuts and fruits, they are cooked briefly in boiling water or steam in a process called

   A. boiling.
   B. scalding.
   C. blanching.
   D. braising.

9. Which of the following are all moist heat methods of cooking?

   A. Steaming, roasting, and poaching
   B. Braising, steaming, and poaching
   C. Poaching, broiling, and braising
   D. Roasting, broiling, and grilling

10. Which of the following are all dry heat methods?

   A. Roasting and broiling
   B. Steaming and roasting
   C. Grilling and poaching
   D. Braising and broiling

11. To double a recipe which calls for 3 cups of liquid would require

   A. 1 1/2 quarts of liquid.
   B. 3 pints of liquid.
   C. 3/8 of a gallon of liquid.
   D. any of the above.

12. The process of combining ingredients using a cutting and folding motion is called

   A. beating.
   B. blending.
   C. chopping.
   D. folding.

13. Poaching is a process of

   A. cooking food in a simmering liquid.
   B. cutting food into small chunks.
   C. cooking food on top of the range in a small amount of fat.
   D. combining ingredients together with a rapid over and under motion.

14. In order to determine the menu price of a meal in an operation employing a 331/3 per cent food cost, the raw food cost must be

   A. divided by 3.
   B. multiplied by 3.
   C. divided by 33.33.
   D. multiplied by 1/3 of its original cost.

15. A "stock" is a

   A. rich flavored thickened liquid.
   B. seafood sauce.
   C. gravy made from roasted or braised meats.
   D. liquid base used in cooking.

16. Bechamal sauce is also known as a

A. white sauce.
B. blonde sauce.
C. tomatoe sauce.
D. brown sauce.

17. The rising or lightening of a batter or dough by the use of chemical or organic ingredients is known as

A. docking.
B. proofing.
C. leavening.
D. kneading.

18. Conformation of meat refers to the

A. ratio of bone to meat.
B. amount and color of fat on the carcass.
C. color and texture of the meat.
D. palatibility of the cooked meat.

19. An example of a tender cut of beef is

A. chuck.
B. round steak.
C. plank steak.
D. rib roast.

20. The maximum holding time recommended for frozen beef cuts is

A. 12 months.
B. 6 months.
C. 9 months.
D. 18 months.

21. The maximum holding time recommended for frozen pork is

A. 12 months.
B. 6 months.
C. 9 months.
D. 18 months.

22. Which of the following poultry has all brown meat?

A. Duck
B. Turkey
C. Cornish hen
D. Fryer

23. If the check for two dinners is $24 and the establishment is operating on a 20% food cost, the raw food cost of these meals

A. cannot be estimated without more information.
B. is approximately $6.
C. is approximately $4.80.
D. is approximately $8.

24. A standardized recipe for a pie yields five 10" pies and each pie is to be cut into eighths. To yield the appropriate number of standard

portions to serve 200 persons, this recipe will have to be increased

A. forty times.
B. twenty-five times.
C. five times.
D. ten times.

25. Which of the following is characteristic of a grade A egg?

A. The yolk is flat and enlarged.
B. The egg spreads over a wide area.
C. The egg spreads slightly.
D. The egg is very large.

26. To adjust a standardized recipe for 50 requiring 15 1/2 pounds of boneless beef chuck to serve 125, how many pounds of chuck would be needed?

A. 45 1/2.
B. 40 1/4.
C. 38 3/4.
D. 36 1/2.

27. A smooth mixture of flour and shortening is a

A. gravy.
B. roux.
C. stock.
D. white sauce.

28. The greenish layer of color around the yolk of a hard cooked egg is due to

A. adding salt to the cooking water.
B. the grade of the egg.
C. failure to cool the egg after cooking.
D. the age of the egg.

29. A number 8 scoop or dipper contains

A. 1/2 cup.
B. 1/3 cup.
C. 3 1/5 tablespoons.
D. 1 3/5 tablespoons.

30. The minimum temperatures for sanitary dishwashing operations are

A. 180°F. for washing and rinsing.
B. 150°F. for washing, 200°F. for rinsing.
C. 140°F. for washing, 180°F. for rinsing.
D. 100°F. for washing, 130°F. for rinsing.

31. A tool used for scraping and cleaning a griddle is a

A. steel.
B. spatula.
C. dish scraper.
D. grill stone.

32. When using a left-handed table service, which of the following items is served from the left of the customer?

A. Water
B. Wine
C. Salad
D. Coffee

33. An area stocked with silverware and supplies for customer service in a restaurant is a

A. supply counter.
B. customer's service station.
C. waitress' station.
D. waitress' side stand.

34. The individual in a food service operation who is responsible for the major food preparation and purchasing is the

A. Garde Manager.
B. Chef Steward.
C. Sous Chef.
D. Swing Cook.

35. Which of the following foods can best create a feeling of satiety or fulfilled appetite?

A. eggs
B. milk
C. butter
D. meat

36. More vitamins are generally found in

A. the center or core of a vegetable.
B. lightly colored vegetables.
C. deeply colored vegetables.
D. any vegetable despite its coloring.

37. To preserve nutrients during the preparation of vegetables which of the following procedures is appropriate?

A. Soaking vegetables in water before cooking.
B. Cooking vegetables in large amounts of water.
C. Uncovering the pan while vegetables are cooking.
D. Keeping chopped or shredded vegetables covered before cooking.

38. The addition of soda to vegetables during cooking.

A. increases the nutritional value of the vegetables.
B. preserves good color but reduces the nutritional value.
C. creates good texture but reduces the nutritional value.
D. preserves the good color and texture.

39. The food item possessing the greatest number of calories among the following is

A. 1 boiled egg.
B. 1 slice of white bread.
C. 1 tablespoon of granulated sugar.
D. 1 tablespoon of butter.

40. The method to use to preserve the greatest amount of nutrients when preparing potatoes is

A. french frying.
B. baking in the skins.
C. boiling in the skins.
D. boiling without the skins.

41. Proteins which contribute the greatest biological value to the human diet are obtained from

A. spinach.
B. whole grain cereals.
C. dried beans and lentils.
D. meats.

42. In purchasing fresh whole chicken for frying, you should generally allow

A. 1/3 to 1/2 pound per serving.
B. 1/2 to 3/4 pound per serving.
C. 3/4 to 1 pound per serving.
D. 1 pound per serving.

43. Eggs graded as A or AA are most appropriately used for

A. purposes other than commercial food service.
B. scrambling or for use in an omelet.
C. mixing in foods such as cakes or mayonnaise.
D. serving whole as fried or poached eggs.

44. A number 10 can be substituted for

A. 4 number 2 1/2 cans.
B. 6 number 2 cans.
C. 3 number 5 cans.
D. 8 number 303 cans.

45. A number 303 can contains

A. 1 3/4 cups.
B. 1 1/2 cups.
C. 1 1/4 cups.
D. 1 cup.

46. The U. S. Department of Agriculture has established which of the following as grades of pork?

A. Prime, choice, good, or commercial.
B. Grade A, B, C, or D.
C. U. S. #1, U. S. #2, or U. S. #3.
D. choice, good, or commercial.

47. The highest gluten content is found in

A. all purpose flour.
B. pastry flour.
C. cake flour.
D. bread flour.

48. Citrus fruits are marketed under numbers which indicate the

A. average weight of fruit in the standard crate.
B. number of units of fruit in the standard crate.
C. average diameter of fruit in the standard crate.
D. weight of the standard crate.

49. The butterfat content of whipping cream is

A. less than 3 1/2 per cent.
B. 3 1/2 per cent.
C. 18 per cent.
D. 30 to 36 per cent.

50. On the average, a wholesale cut of beef rib weighs

A. 30 to 40 pounds.
B. 20 to 30 pounds.
C. 10 to 20 pounds.
D. less than 10 pounds.

51. "Net weight" refers to the

A. combined weight of an item and its container.
B. weight of the item with the liquid removed.
C. weight of the item without its container.
D. estimated weight of the item and its container.

52. The fruit pack which has the least water added to it during processing is the

A. heavy pack.
B. solid pack.
C. water pack.
D. sirup pack.

53. The dangerous temperatures which favor bacterial growth in food items are

A. 0 to 100°F.
B. 45° to 140°F.
C. 35° to 95°F.
D. 25° to 120°F.

54. Which of the following spoil most rapidly before and after cooking?

A. Pork
B. Beef
C. Poultry
D. Fish and seafoods

55. Salmonella is best defined as a

A. covered pan used for steaming fish.
B. menu item based on salmon eggs.
C. menu item featuring fish in a cream sauce.
D. bacteria which flourishes in some prepared foods.

56. The most appropriate storage for fresh leafy vegetables is a

A. cool dry storage of 50° to 60°F.
B. dry storage of 70°F.
C. refrigerated storage.
D. freezer storage.

57. Fresh grapefruit can be properly stored without losing quality up to

A. 8 weeks.
B. 6 weeks.
C. 3 weeks.
D. 1 week.

58. Fresh celery deteriorates in quality when it is stored at temperatures below

A. 30°F.
B. 40°F.
C. 50°F.
D. 60°F.

59. The most appropriate container to use when refrigerating gravy is a

A. 5 to 10 gallon cooking pot.
B. 20 quart enamel pan.
C. 4" deep stainless steel pan.
D. 10 quart plastic dish pan.

60. A sign of unsafe contents in a can of food is when the can

A. has the wrapper removed.
B. has flat or slightly concave ends.
C. has been dented.
D. has bulging ends.

61. The convection oven differs from a regular oven in that it

A. shortens cooking time and uses lower temperatures.
B. shortens cooking time and uses higher temperatures.
C. lengthens cooking time and uses lower temperatures.
D. lengthens cooking time and uses higher temperatures.

62. Which of the following statements is accurate about preparing starch products?

A. The presence of lemon juice in a starch mixture increases the thickening power of the gel.
B. Boiling water is added directly to dry starch to produce a gel of good consistency.
C. An excess amount of sugar in a starch mixture will increase the thickening power of the gel.
D. After the liquid is added to the starch, it should be stirred constantly to get an even distribution of the granules.

63. Which of the following statements is inaccurate about pasta products?

A. Pasta products are cooked in a large volume of salted, boiling water.
B. Spaghetti, noodles, rice, and macaroni are all pasta products.
C. If pasta products are overcooked they become soft and mushy.
D. Macaroni usually doubles its dry volume when cooked.

64. When preparing custards, which of the following procedures is accurate?

A. It is not necessary to refrigerate cooked custards.
B. Custards are cooked at boiling temperatures to eliminate the raw egg taste.
C. The doneness of a baked custard is determined when the custard pulls away from the sides of the dish.
D. Baked custards are placed in a water bath before cooking.

65. Which of the following statements concerning egg cookery is accurate?

A. The addition of acid to water when poaching eggs causes the egg white to become tough.
B. Poached eggs are broken directly into boiling water.
C. Shirred eggs are prepared the same way as poached eggs.
D. A plain French omelet and scrambled eggs are made of the same ingredients.

66. A proofing cabinet is used to

A. heat baked goods.
B. bake cakes, pies, rolls and other bakery items.
C. allow yeast dough products to rise.
D. test baked goods.

67. A bain-marie is a

A. small portable oven.
B. paddle used for retrieving bread from an oven.
C. hearth for baking breads.
D. steam kettle or double boiler.

68. Which of the following statements about microwave ovens is most accurate?

A. Increase the hazards of burns in handling foods.
B. Use all regular ovenware utensils.
C. Requires longer cooking time.
D. Cook foods from the inside out.

69. Water boils at

A. 100°F.
B. 150°F.
C. 180°F.
D. 212°F.

70. Stiffly beaten egg whites will have a better texture and volume if

A. the bowl and beater are free of grease.
B. eggs which are not fresh are used.
C. a small amount of egg yolk is added.
D. chilled eggs are used.

71. Fat in deep fat frying is usually maintained at a temperature of

A. over 400°F.
B. 300° to 350°F.
C. 250° to 300°F.
D. 200° to 250°F.

72. The leavening agent in a sponge cake is

A. yeast.
B. baking soda.
C. baking powder.
D. beaten egg whites.

73. In the preparation of pastry dough, the fat should be

A. cut into the dry ingredients.
B. melted before beaten into the dry ingredients.
C. added to the flour after mixing in the liquid.
D. creamed with the flour.

74. A hard crust on yeast breads and rolls can be created by

A. using a flour with a high gluten content.
B. cooling the bread rapidly.
C. baking in a hot oven.
D. injecting steam into the oven while baking.

75. In making a fruit gelatin, it is advisable to add the fruit

A. after the gelatin has completely gelled.
B. after the gelatin has begun to gel slightly.
C. after dissolving the gelatin in hot water.
D. before dissolving the gelatin in hot water.

APPENDIX D

COLLEGE OF HOME ECONOMICS
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Blacksburg, Virginia 24061
DEPARTMENT OF HUMAN NUTRITION AND FOODS

January 25, 1972

Dr. Susan F. Weis
Assistant Professor
Department of Home Economics Education
212 Rackley Building
Pennsylvania State University
University Park, Pa. 16802

Dear Dr. Weis:

Thank you for your letter concerning the development of a validated instructional system for post secondary hospitality education using learning packets based on HELP design. At the AHEA board meeting last week the HELP program was discussed and is very interesting.

I think presentation, as suggested, at the 1973 AHEA convention would be quite beneficial. If you would be interested I could envision your group featured as one entire section meeting. This could allow the group to have ample time for questions as I am sure they would be very interested in this project.

As program chairman for next year's section meetings, I would be happy to commit one session to the presentation. If you have any questions or I can be of assistance providing additional information, please let me know.

Sincerely,

Mary E. Quam

Mary E. Quam
Associate Professor
Department of Human Nutrition
and Foods

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